VIDE-V24260

DeluxScan 15G

15″ (13.7″ viewable) Color Monitor

MODEL : HL 5864F

TECHNICAL SERVICE MANUAL

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SAFETY PRECAUTION

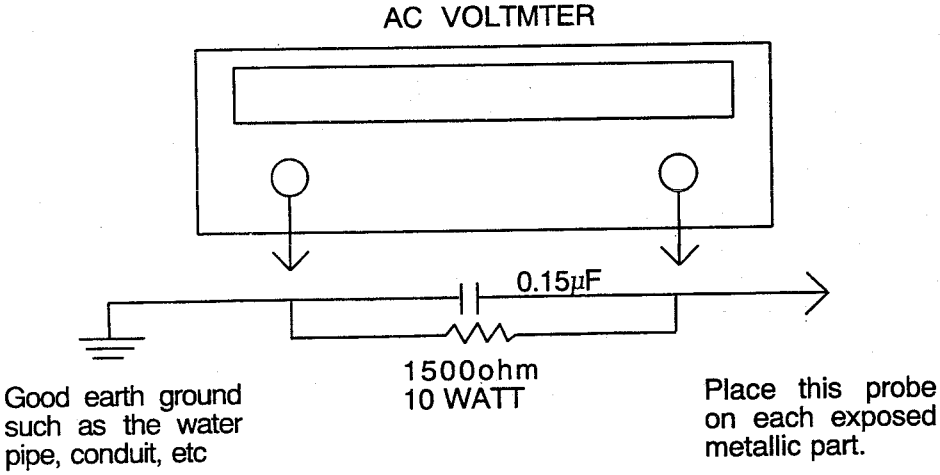
WARNING

Service should not be attempted by anyone unfamiliar with the necessary precautions on this monitor. The followings are the necessary precautions to be observed before servicing.

1. Always discharge the high voltage to the CRT conductive coating before handling the CRT. The picture tube is highly evacuated and if broken, glass fragments will be violently exploded. Use shatterproof goggles and keep picture tube away from the bare body while handling.

2. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as non-metallic control knobs, insulating covers, shields, isolation resistor-capacitor network etc.

3. Before returning the monitor to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as signal connectors, terminals, screw heads, metal overlays, control shafts etc, to be sure the monitor is safe to operate without danger of electrical shock. Plug the AC line cord directly into a AC outlet (do not use a line isolation trasformer during this check.). Use an AC voltmeter having 1500 ohm per volt or more sensitivity in the following manner : Connect ground(water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC Voltage across the combination of 1500 ohm resistor and 0.15μF capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. The Voltage must not exceed 0.3 volts RMS. This corresponds to 0.2 milliamp AC. Any value exceeded this limit constitutes a potential shock hazard and must be corrected immediately.


AC VOLTMTER
0.15μF
1500ohm
10 WATT
Good earth ground such as the water pipe, conduit, etc
Place this probe on each exposed metallic part.

X-RAY RADIATION PRECAUTION

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must be under the specified limit. The nominal value of the high voltage of this monitor is 24.5KV±0.5KV at zero beam current(minimun brightness) under a 120V AC power source. The high voltage must not(under any circumstances) exceed 27.5KV. Each time a monitor requires servicing, the high voltage should be checked.
   It is recommended the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.

2. This monitor is equipped with a protection circuit which prevents the monitor from producing excessively high voltage. Each time the monitor is serviced, the protection circuit must be checked to determine that the circuit is properly functioning.

3. The only source of X-RAY RADIATION in this monitor is the picture-tube.
   For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.

4. Some parts in this monitor have special safety-related characteristics for X-RAY RADIATION protection.
   For continued safety, parts replacement should be undertaken only after referring to the product safety notice.

PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this monitor have special safety-related characteristics. These characteristics are often not evident from visual inspection.
Replacement parts which have these special safety characteristics are identified in this manual; electrical components having such features identified by "⚠" in the replacement parts list and schematic diagram.
For continued protection, replacement parts must be identical to those used in the original circuit. The use of substitute replacement parts which dose not have the same safety characteristics as the factory recommended replacement parts shown in this service manual, may create shock, fire, X-RAY RADIATION or other hazards.

GENERAL INFORMATION

1. Description

This 15" (13.7" viewable) color display monitor is operated in R, G, B, drive mode input.

2. Operating instructions

2-1. External instructions

2-2. Front

Power Switch, Brightness, Contrast, Menu, Select, Down(▼), Up(▲), DPMS (Power) LED.

2-3. Rear

Input connection, (AC & SIGNAL CABLE)

2-4. Service Instruction(internal controls)

High-Voltage, +55V, Focus, Screen, H-Center.

3. Electrical Characteristics

3-1. 100-240 Volt 60Hz/50Hz for use all over thd world.

This power supply is a 80 Watt multi output SMPS for monitor.

3-2. Video

Input:0.7V p-p analog signal(at 75 ohm terminated)
Bandwidth:85MHz(-3dB)
Polarity:Positive

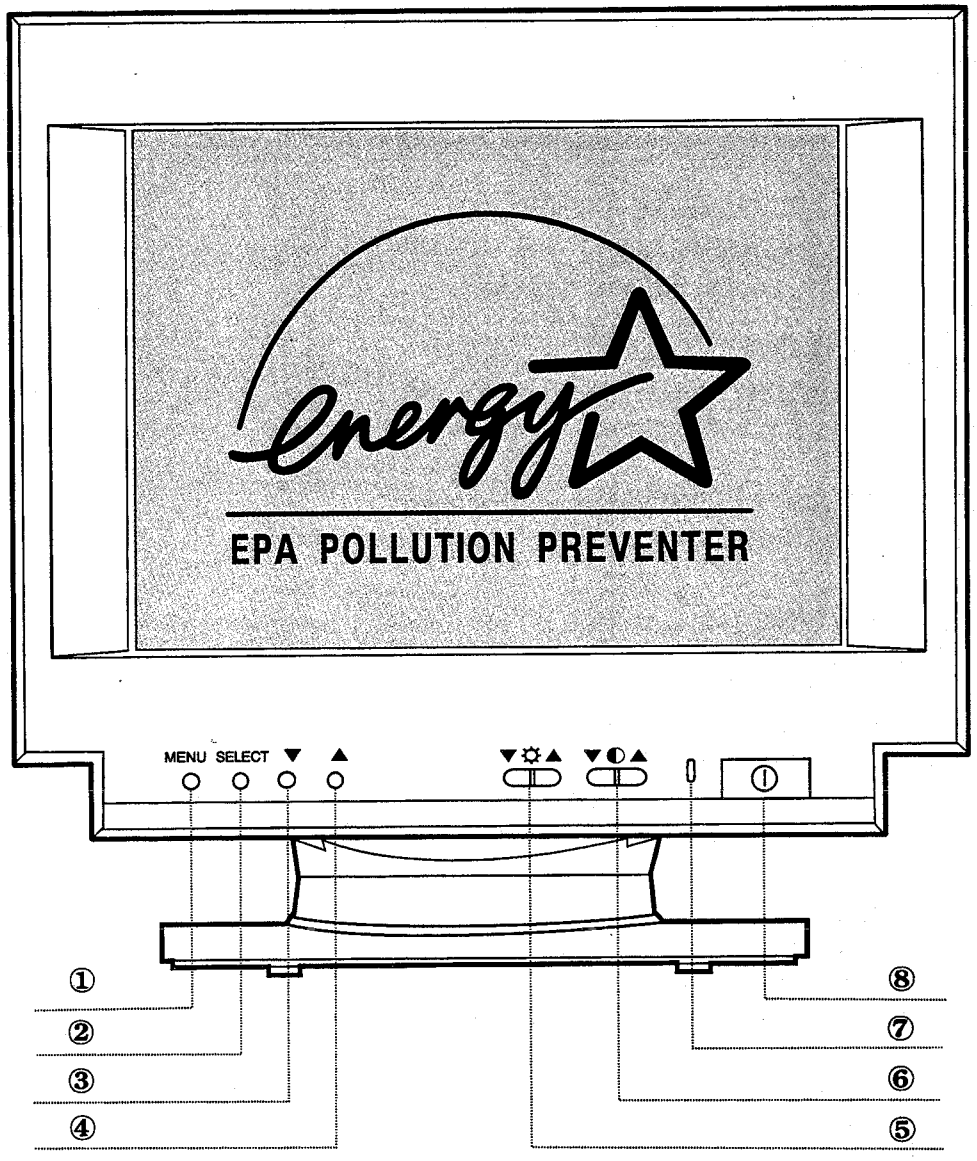
3-3. Horizontal Drive

Level:TTL High:2.4V min
Low :0.4V max
Polarity:Negative or Positive
Frequency:30KHz~64KHz
Timing Limits : Pulse width : 1.0μs $\leq$ Thp $\leq$ 8.0μs

3-4. Vertical Drive

Level:TTL High:2.4V min
Low :0.4V max
Polarity:Negative or Positive
Frequency:50Hz~150Hz
Timing Limits : Pulse width : 0.05ms $\leq$ Tvp $\leq$ 0.5ms

CONTROL DESCRIPTION

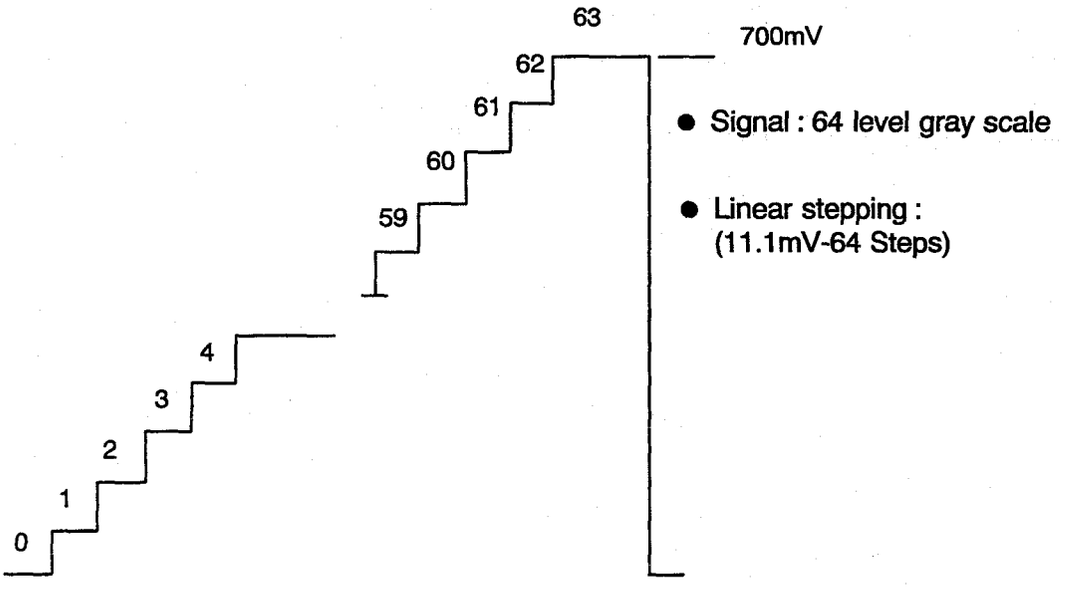


① MENU
② SELECT
③ Adjust -
④ Adjust +
⑤ Bright - +
⑥ Contrast - +
⑦ Power (DPMS) LED
⑧ Power S/W

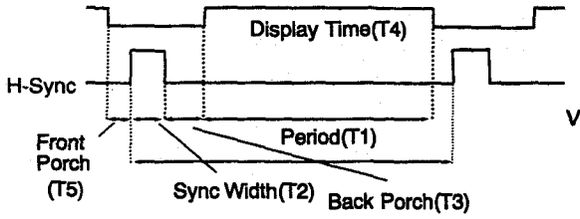
VIDEO INPUT SIGNAL

Recommended signals are shown below.

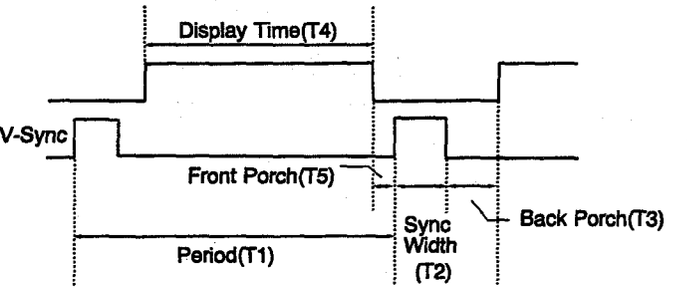
- **Video Signal**
  Video Level : 0 to 700mV
  Polarty : Positive
  Video Input : RGB separated
  Analog level
  Sync input : H-Sync ; TTL level
  V-Sync ; TTL level
- **Waveform**
  Video input(R, G, B)



● H-Sync



● V-Sync



● Timing Table

Horizontal	Pixel	720	640	640	800	800	1024	1024	1024	1024	1280
Frequency	kHz	31.469	31.469	37.500	37.879	46.875	35.524	48.363	56.476	60.023	63.981
Period	μs	31.778	31.778	26.667	26.400	21.333	28.150	20.677	17.707	16.660	15.630
Blanking	μs	6.356	6.356	6.349	6.400	5.172	5.350	4.923	4.053	3.657	3.778
Active	μs	25.422	25.422	20.317	20.000	16.162	22.800	15.754	13.653	13.003	11.852
Front Porch	μs	0.636	0.636	0.508	1.000	0.323	0.180	0.369	0.31	0.203	0.444
Back Porch	μs	1.907	1.907	3.810	2.200	3.232	1.250	2.462	1.92	2.235	2.296
Sync Width	μs	3.813	3.813	2.032	3.200	1.616	3.920	2.092	1.813	1.219	1.037
Vertical	Lines	400	480	480	600	600	768	768	768	768	1024
Frequency	Hz	70.080	59.950	75.000	60.316	75.000	87.000	60.004	70.070	75.029	60.020
Period	ms	14.268	16.683	13.333	16.579	13.333	11.500	10.666	14.272	13.328	16.661
Blanking	ms	1.557	1.430	0.533	0.739	0.533	0.696	0.786	0.673	0.533	0.656
Active	ms	12.711	15.253	12.800	15.840	12.800	10.810	15.880	13.599	12.795	16.005
Front Porch	ms	0.413	0.318	0.0270	0.026	0.021	0.014	0.062	0.053	0.017	0.016
Back Porch	ms	1.080	1.048	0.427	0.607	0.448	0.563	0.600	0.513	0.466	0.594
Sync Width	ms	0.064	0.064	0.080	0.106	0.064	0.113	0.124	0.106	0.050	0.047
Interlaced	Y/N	N	N	N	N	N	Y	N	N	N	N
Sync Polar	H	-	-	NA	NA	NA	NA	NA	NA	NA	NA
	V	+	-	NA	NA	NA	NA	NA	NA	NA	NA
Pixel Rate	MHz	25.175	25.175	31.500	40.000	49.500	44.900	65.000	75.000	78.750	108.000

The monitor is compatible with additional modes within the specified frequency ranges provided that they are different at least for one of the following :

Horizontal Freq. : ±1kHz
Vertical Freq. : ±2Hz

Note : Even if the monitor detects the input timing as a factory preset mode, the size and position may not be able to be set as desired. Check the input timings are under the specifications and adjust the image as you want.
For better quality of display image, use the timing and polarity shown in the table above, Please see you video card user's guide to ensure compatibility.

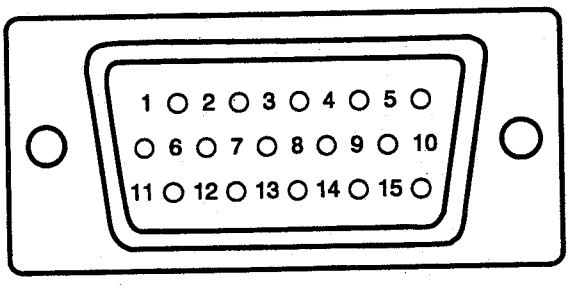
VIDEO INPUT TERMINAL

A 15 Pin D-sub connector is used as the input signal connector.
Pin and input signals are shown in the table below.

Pin Description

SIGNAL / PIN NO.	SEPERATE SYNC	COMPOSITE SYNC
1	RED	RED
2	GREEN	GREEN
3	BLUE	BLUE
4	GROUND	GROUND
5	GROUND	GROUND
6	RED GROUND	RED GROUND
7	GREEN GROUND	GREEN GROUND
8	BLUE GROUND	BLUE GROUND
9	N.C	N.C
10	LOGIC GROUND	LOGIC GROUND
11	GROUND	GROUND
12	SDA	SDA
13	H-SYNC	(H+V) SYNC
14	V-SYNC(VCLK)	VCLK
15	SCL	SCL

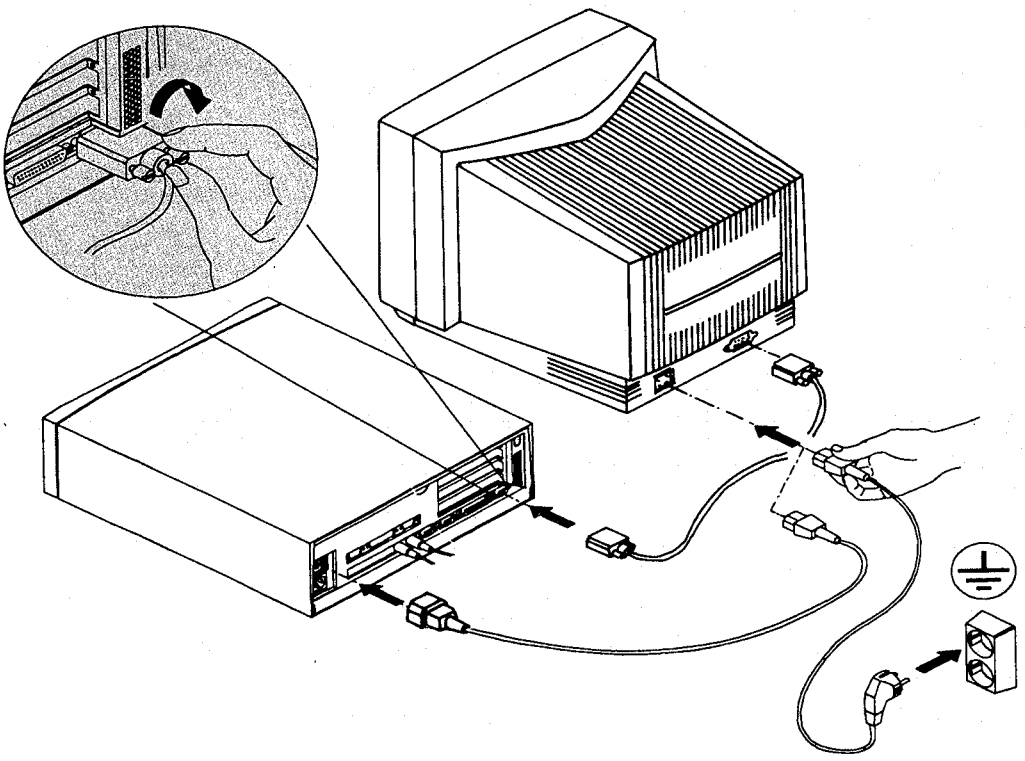
D-Sub miniature connector



CONNECTING WITH EXTERNAL EQUIPMENT

Cautions

Be sure to turn off the power of your computer before connecting the monitor.



THEORY OF OPERATION

1. Power Supply

The AC line voltage range is from 90V to 264V.
The SMPS has +56V, +80V, +6.5V, +12V and -12V outputs.
The inlet connector with a EMI filter is used to reduce the noise from the power supply.
The conducted noise is filtered by inlet (NF101), X and Y capacitors (C101~103) and a common mode line filter (L101).
The input rectifier section (BD101) converts the AC line voltage into a DC voltage to power the SMPS.
The KA3842B (U101) drives the power transistor according to the PWM signals generated by the R_T and C_T (R111, R117, C105) connected pin 4 of U101.
The KA3842 (U101) is an integrated current mode PWM.
It consists of an oscillator, error amplifier, current sense comparator, under voltage lock-out and an MOSFET drive stage.
The switching frequency is locked to horizontal scan frequency by horizontal flyback pulse from sync transformer (T102).
The power supply supports the DPMS function.
When the monitor is in OFF mode with no pulsed syncs, Q603 and Q604 is turned off. It turns Q 601 off, U103 on and pin 1 of U101 to low.
The total power consumption must be less than 5 watt in off mode.

2. Signal Processing and MCU Control

when the H and V sync or TTL composite sync are input to MCU, MCU can measures the H and V frequency to detect the video mode. MCU has digital to analog converter (DACs) control function like R/G/B Cut-off, side pincushion, R/B gain, H-size, H-position, V-size, V-position, Trapezoid, brightness, contrast and rotation. (PWM 0~PWM13)
When power is on or input signal is changed, MCU generates a screen mute signal (Pin22 ; Stand-by) to prevent unexpected damage.
This screen mute signal, one shot pulse is applied to Q504.
Then brightness is to low, so the screen is muted.

3. Horizontal Deflection

STV7778(U301) is a monolithic IC for H/V sync and drive processing. In phase comparator between sync and oscillator(PLL2), DC controls for phase, frequency and output duty setting.
When H-sync applied, the internal oscillator is automatically locked. The duty cycle of H-output pulse(pin 21) is 43%.
Q312 and T301 are used to drive the H-output transistor(Q311). Q311 is turned on, it conducts current through the deflection yoke on the right hand side of the screen. This current comes from the S correction capacitors (C339, 341, 342, 344), which have a charge equal to the effective supply voltage.
When the Q311 is opened up, the damper diode(D308) allows current for left hand side of the screen to flow back through the deflection yoke to the S capacitors.
The flyback cpacitor (C338) determines the size and length of the flayback pulse. The S capacitors correct outside versus center linearity in the horizontal scan.
Two FETs (Q309, 310) and relay (RL301) select the value of S capacitors. H-centering is controlled by a switch (SW301). The switch selects DC offset current flow through the yoke.

A diode moulator is used to control the E-W correction and H-size. STV7778 (U301) generates the E-W parabola wave using vertical ramp. A DAC is used to control the amplitude of E-W parabola, H-size. A power buffer (Q316, Q317 darlington) drives the diode modulatior.
In order to keep the high voltage constant independent of the horizontal scan frequency, the supply voltage of FBT must increase with increasing scan frequency proportionally. A step-up mode DC//DC converter with PWM is used to realize this demand. STV7778 (U301) compares High Voltage feedback with Refence voltage. Its output pulse swithches a FET(Q315). To adjust the High Voltage, (Pin 39) TDA9103(U301) has a control Teminal.

4. Vertical Deflection

In vertical section of STV7778 (U301), there is auto-sync processing.
The vetical output stage consists of a power OP-AMP with extra flyback grnerator. TDA8172 (U 201) is userd as vertical output stage.

5. X-ray Protection and Beam Current Limiting.

A failure in the horizontal scan control section could cause a dangerous situation; the high voltage might rise to an unacceptable high level. When the flyback voltage rise to unacceptable level, STV7778 (U301 Pin16) detect these states (under 1.6V).
It causes the H-drive stage and oscillator to be turned off. Then high voltage is shut down until the power switch is on.
The average anode current is measured at lower side of the High Voltage winding of the FBT. The anode current flows through resistor R502, 503 connected against +12V. When the anode current increases, the voltage across R503 increases also. The base voltage of Q501 drops and the ACL will be active.

6. Video Amplifier

MC13282AP (U401) is a wide band video amplifier with three matched video amplifiers, contrast control OSD interface, OSD contrast control, drive controls, blanking gate and clamp gate. H blank signal is applied to pin24. During blanking all three outputs are thrown to the pedestal level. A inserted H-Sync is used to a clamp signal. The signal is applied to pin 23.
Three OSD inputs (pin8, 10, 12 of U401) are TTL compatible and typical bandwidth is 50MHz.
A fast commutate pin is provided to select either the video or the OSD inputs as a source for the amplification.
OSD contrast control (pin 11 of U401) is also provided for the amount of amplification required when OSD inputs are selected.
MC141540P4 (U403) is a high performauce HCMOS device designed to interface with a micro controller unit (U601) to allow colored symbols or characters to be displayed outo the monitor screen.
The output stage is made of descrete power amplifier. The output capable of 40 volts swing in less than 5 n Sec. To get good video response, emmiter followers and peaking components are used.
The three cathodes are AC coupled to the video amplifiers. The DC level on each cathode is set by a cut-off amplifier and clmap diode. The value of the DC voltage is adjusted by DACs.

TROUBLE SHOOTING

1. Introduction

This troubleshooting guide is arranged by fault conditions. Following each fault condition is a check for a signal on condition to be answered YES or NO.
For NO answer proceed to the right and continue until the fault is located.
For a YES answer continue in the left column to the next numbered check.
Again followed this procedure until the fault is located.

2. Trouble shooting procedure

When Troubleshooting this monitor, some precaution should be observed.
Use a high quality isolation tranformer is capable of providing 3 Amps or more.
Never connect primary ground and secondary ground together including use with an isolation transformer.
Measure high voltage with respect to chassing ground only, and with a high impedance prove of 1000 mega-ohm or higher and rated for 30KV DC or higher.
Measure Q311 collector pulse with a high quality 100:1 probe rated for 1500 volts or higher.

3. Troubleshooting procedure

Symptom	Ckeck(YES)	Action(NO)
a) Image is scrolling.	1) Check for Vsync at pin 40 of U601	Check 15pin D-sub connector, cable, D611
	2) Check for positive going Vsync at pin 34 of U301. (TP7)	Check U301, U601
	3) Will V-oscillator is locked with input signal? (pin 27 of U301)	Check C327
	4) Check V-ramp at pin 30 of U301	Replace U301.
b) Image is unstable.	1) Check for Hsync at pin 39 of U601	Check 15pin D-sub connector, cable, D612
	2) Check for positive going Hsync at pin 33 of U601. (TP6)	Replace U601
	3) Will H-oscillator is locked with input signal? (pin 2 of U301)	Check C310, C311, C312, R313, R314, D302
	4) Check H-out at pin 21 of U301 (TP9)	Replace U301
	5) Check for flyback pulse at pin 8 of U301. (TP11)	Check R305

Symptom	Ckeck(YES)	Action(No)
c) Screen is black but high voltage is present.	1) Check for G2, pin4 of CRT. Around 600 volts?	Check R425, G2 wire, CRT socket.
	2) Check for heater voltage at pin 6 of CRT. (about 6.0V)	Check D127, FL424, R454, P401 CRT socket.
	3) Can screen be lit with brightness control at MAX?	Check D501, C502, D509, Q506, Q504 CRT scocket.
	4) Check for video at pin 2, 4, 6 of U401.	Check 15pin D-sub connector, cable, D401-406
	5) Check for negative pulse for clamp at pin 23 of U401. (TP17)	Check Q321
	6) Check if contrast controls video level at pin 15, 19, 22 of U401. (TP19)	Check U601, R501, Q502.
	7) Check for video at pin 8, 9, 11, 25 U402.	Check P402.
	8) Check for video of pin 1, 3, 5 of U 402. (TP20)	Check U402, 72VDC (pin6) 10VDC (pin10)
	9) Check if R, G, B cut-off control the video DC level at pin 4, 6, 9 of CRT.	Check Q401 to Q406
	10) Check CRT.	
d) Screen is black with no high voltage.	1) Check for 55V at anode of D105. (TP4)	Check 55V with no load. If no 55V, Check SMPS. If 55V OK, Check Q313 to Q315, R357, R358, Pin 22 of U301
	2) Check for 12V at collector of Q103.	Check 12V with no load. If no 12V, Check Q103, Q104, SMPS. If 12V OK, Check U301, U401, U201
	3) Check for 5V at pin 3 of U104.	Check U104, U601
	4) Check collector pulse Q315.	Replace Q315
	5) Check collector pulse of Q311. (TP13)	Q311, D309, D318
	6) Check feedback voltage at pin 16 of U301. Around 11V?	Check D342, R359, C381, C385, D303, D315, R303, R315, R316, R317, C316
	7) Check T501(FBT), Yoke.	

ADJUSTMENT METHOD

1. Caution

Extremely high voltage are present in the area around the FBT(T501) and the anode high voltage lead. Do not touch Q102 or its heatsink as high voltage is present on these components.

2. Equipment Required

Digital Voltmeter
Frequency Counter : about 40 Hz to 100 KHz
Color Analyzer
Video Signal Generator
High Voltmeter : up to 30 KV
Alignment Templete : Attachment 1
Factory Adjustment JIG : Attachment 2

3. Before Adjustment

Verify that the video output level is 0.7 Vpp at 75 ohm termination and the video timmings are same as standard timming given in specification. Place the AC power switch to the ON position. Allow the monitor to stabillize thermally for 15 minutes at least before any adjustment about the image parameters. The electron optics of the CRT and electronics of system require time of stabillize.

4. Adjustment Procedure

4-1 Voltage and Free-Run Frequency

1) 56V Setting
   - Video Signal : Cross Hatch pattern in 31.5kHz, 400 mode
   - Set the G2 controls to the minimum position.
   - Measuring Point : P502, main board
   - Adjustment : VR101, main board
   - Limits : 55.5±0.5V

2) High Voltage Setting
   - Video Signal : Black pattern in 31.5kHz, 400 mode
   - Set the G2 controls to the minimum position.
   - Measuring Point : P501
   - Adjustment : VR301, main board
   - Limits : -140V±0.5V

3) Screen Voltage Setting
   - Video Signal : Black pattern in 31.5kHz, 400 mode
   - Measuring Point : G2 on the CRT board (use High Voltmeter)
   - Adjustment : Screen VR (lower VR of FBT)
   - Limits : 600V±10V

4-2 Horizontal Raster Center Setting

- Video Signal : Back Raster pattern in 64kHz, 768 mode
- Measuring Point : SW301, main board
- Place the Raster in Center of the bezel.

4-3 Ratation Setting

- Video Signal : Cross Hatch pattern in 31.5kHz, 400 mode
- Adjust the tilt of screen by using the MENU, ▲, ▼ and select keys.

4-4 Color Setting

- Adhere color Analyzer sensor closely to CRT center.
- Connect the Factory Adjustment jig to P501 on the main board.
- Video mode : 31.5kHz, 400mode

1) Color Temperature 9300°K Setting
   - Video Signal : Back Raster pattern
   - Select " 9300 " by using the MENU, ▲, ▼ and SELECT keys.

   ① Cut-off Setting
   - Select " Cut-off " by using the ▲, ▼ and SELECT keys.
   - Press the SELECT key to get the desired R, G or B Cut-off.
   - Press the ▲ or ▼ keys to limit the X and Y color coordiuate.
   - Limits : X=0.281±0.02, Y=0.311±0.02

   ② Back Raster Setting
   - Adjust the brightness of Back Raster by pressing the ▲ and ▼ keys of Brightness.
   - Limits : 2.5±0.5 cd/m^2

   ③ Drive Setting
   - Video signal : 2" square white box
   - Select the " Drive " by the using, ▼, ▲ and select keys.
   - Adjust the brightness go to 100 cd/m^2 by pressing the ▲ and ▼ keys of contrast.
   - Press the SELECT key to get the desired R or B drive.
   - Press the ▲ or ▼ keys to limit the X and Y color coordinate.
   - Limits : x=0.281±0.02, Y=0.311±0.02

   ④ Contrast Setting
   - Adjust the brightness of 2" square white box by pressing the ▲ and ▼ keys of contrast.
   - Limits : 170±5 cd/m^2

2) Color Temperature 6500°K Setting
   - Video Signal : Back Raster pattern
   - Select " 6500 " by using the MENU, ▲, ▼ and SELECT keys.

   ① Cut-off Setting
   - Select " Cut-off " by using the ▲, ▼ and SELECT keys.
   - Press the SELECT key to get the desired R, G or B Cut-off.
   - Press the ▲ or ▼ keys to limit the X and Y color coordinate.
   - Limits : X=0.313 ± 0.02, Y=0.329 ± 0.02

4-5. Geometry Setting

- Adhere template closely to the CRT surface.
- Video Signal : Cross hatch pattern in 31.5kHz to 64kHz expectively.
- Adjust the all items by using the MENU, ▲, ▼ and SELECT keys.

1) H-Position Setting
   - Place the screen in center of the horizontal direction.

2) H-Size Setting
   - Adjust the horizontal size of the screen to 260±2 mm.

3) V-Position Setting
   - Place the screen in center of the vertical direction.

4) V-Size Setting
   - Adjust the vertical size of the screen to 195±2 mm.

5) Pincushion Setting
   - Make the straight line to the vertical right and left line of screen.

6) Trapezoid Setting
   - Make the same size to the horizontal up and bottom size of screen.

4-6 Save

After the above setting, press the Recall key to save the setting.

* After adjusting, remove the Factory Adjustment JIG.

4-7 Focus

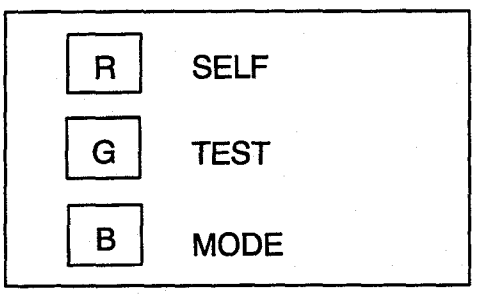
- Video Signal : Full "H" character pattern in 64kHz.
- Adjust the Focus VR on the top of the FBT so that the image of whole screen looks clear.

5. X-Ray Protection Test

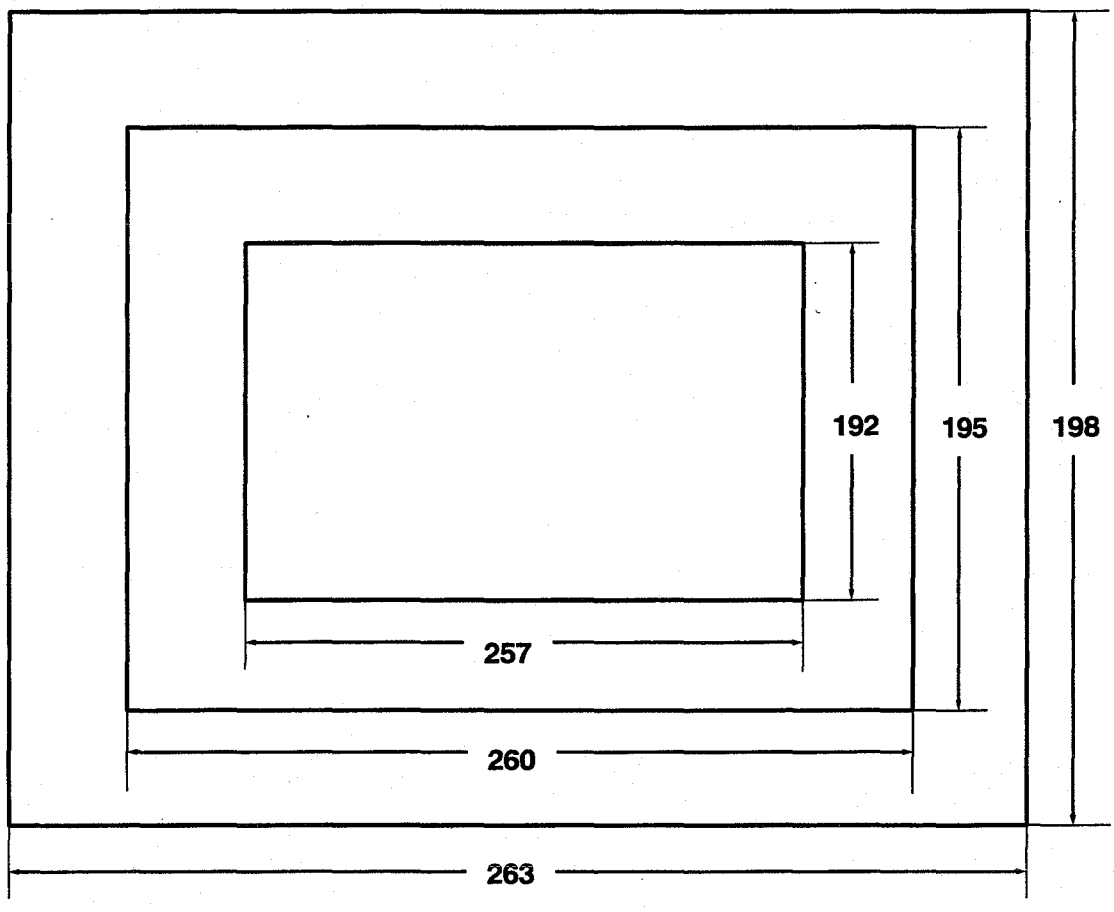
- In any signal input condition, short J347 and R303 (main board) by using the JIG.
- At this moment, check out whether raster disappears.
- Remove the JIG.
- After the power switch of the set off and on, check out proper working.

6. Burn-In

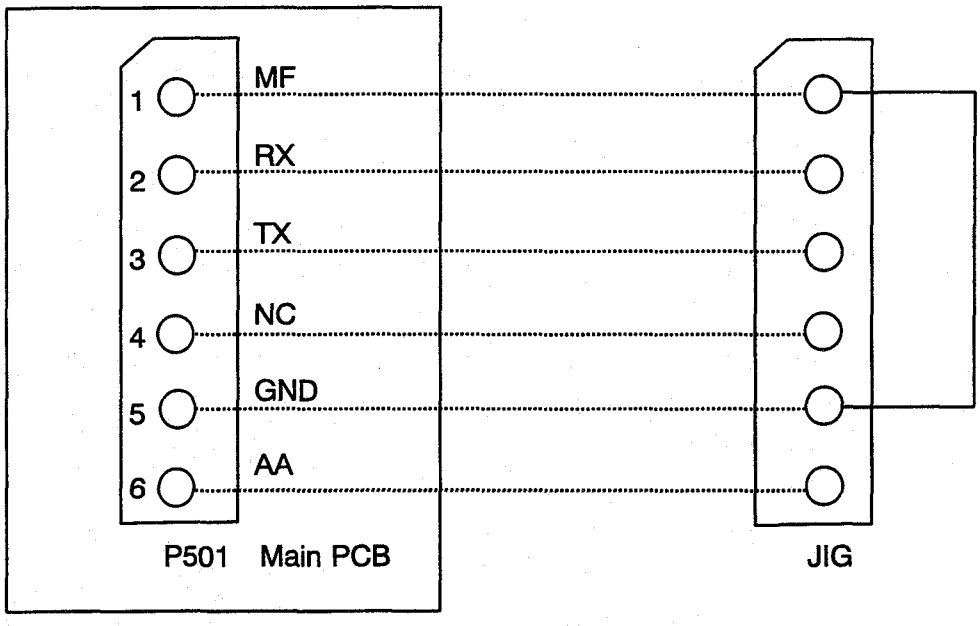
- When the signal cable is removed, check out the following OSD images, SELF TEST MODE, on the screen.



Attachment 1. Alignment Template



Attachment 2. Factory Adjustment JIG

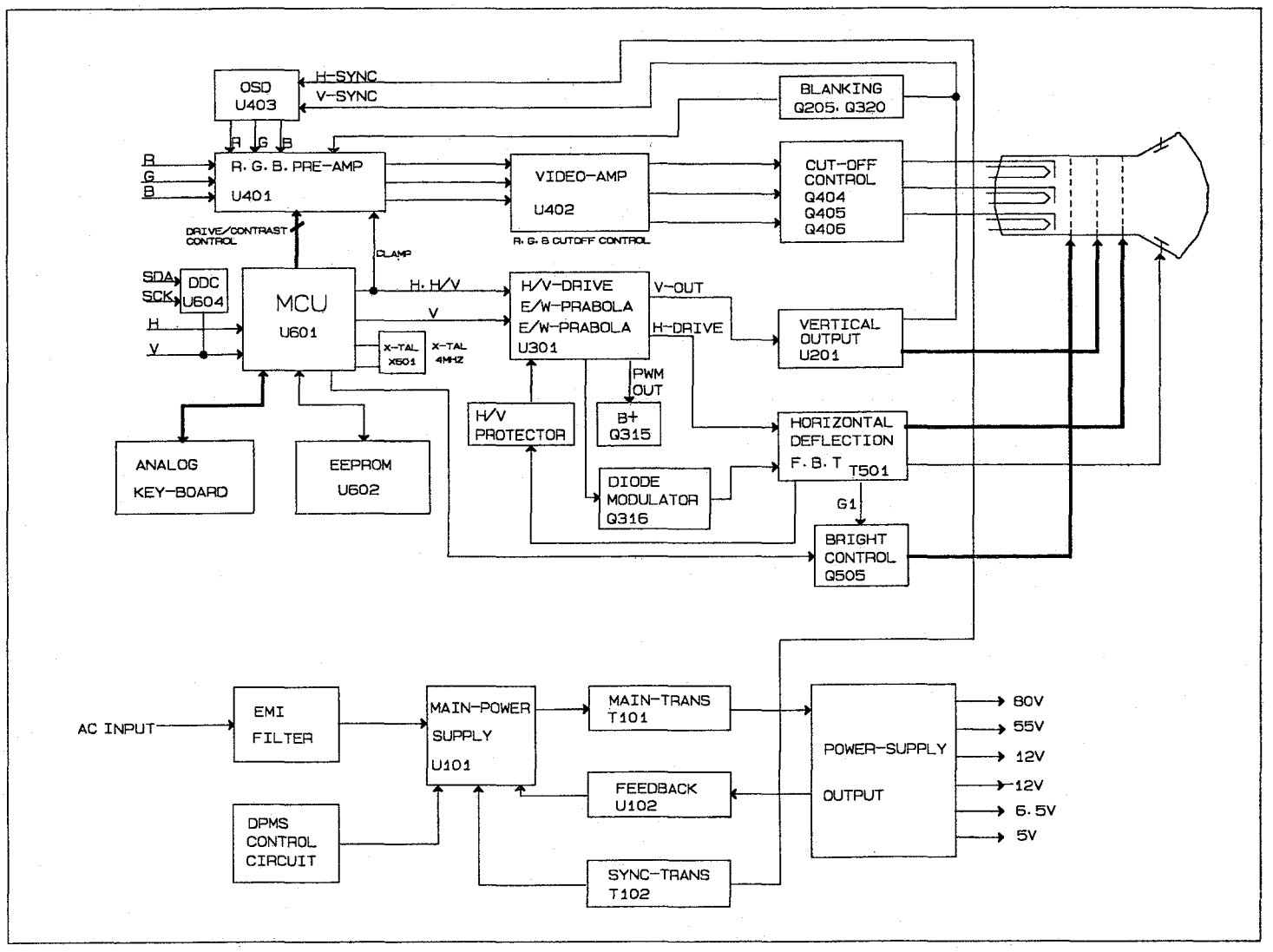


SPECIFICATION

CRT	SIZE	15" (13.7" viewable) Diagonal, Flat
	Dot Pitch	0.28 mm
	Type	Non-glare, Anti-Static
Input	Signal	R.G.B Analog
	Connector	15 pin D-Type
SYNC	H-F	30~65 kHz(Automatic)
	V-F	50~150 Hz(Automatic)
Video Bandwidth		85MHz(-3 dB)
Display	Area(H×V)	262×196mm (Max. OVERSCAN)
	Color	Infinite
Resolution		Max 1280×1024(64KHz/60Hz)
User Controls & OSD Controls		Power Switch, Brightness, Contrast, H/V Size, H/V position, Pincushion, Trapezoid, Degauss, Color, Rotation, Recall
Power Management		As per VESA Standard, Lower than EPA's recommendation
VESA DDC 1/2B		Basic
Compatibility		VESA, 8514/A, XGA, EVGA, MAC II
Power Source		100 - 240 VAC(Universal Power) 1.3A 80W
Safety & Regulation	MPR II	Basic
	EMI	FCC B, CE
	Safety	UL, CSA, TÜV-GS, ISO-9241-3, DHHS, NEMKO, DEMKO, FIMKO, SEMKO
Temperature	Operating	5 to 35 degree celsius
	Storage	-30 to 60 degree celsius
Humidity	Operating	35 % to 80 %(Non-condensing)
	Storage	30 % to 85 %
Weight		Unit : 12.9Kg Carton : 15.0Kg
Dimension(W×H×Dmm)		356×370×384 mm

* Specification is subject to change without notice for performance improvement.

BLOCK DIAGRAM



REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTICE : COMPONENTS MARKED WITH ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY.

ABBREVIATIONS:

RD R-CARBON	CK C-CERAMIC, HK
RS R-METAL OXIDE	CE C-ELECTROLYTIC
RX R-CEMENT	CC C-CERAMIC, TEMP
RN R-METAL(±1%)	CQ C-POLYESTER, C-POLYPROPYLENE
	CF C-METAL POLYESTER C-METAL POLYPROPYLENE

NOTE : COMPONENTS OF THIS PARTS LIST CAN BE CHANGED FOR QUALITY IMPROVEMENT WITHOUT INFORMATION.

1. PCB MAIN BOARD ASSY

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
1	B4008500100A		CABLE TIE	
2	E4208512101		PCBA MAIN(I*),HL-5864F	
3	E42045261060		WIRE ASSY,TERMINAL 130MM	
4	E4208412161		PCBA MAIN(A6*),HL-5864F	
5	E4208412151		PCBA MAIN(A5*),HL-5864F	
6	E4208412141		PCBA MAIN(A4*),HL-5864F	
7	DTBYV26E	D106	DIODE,BYV26E SORTED	
8	DTRGP15J	D314	DIODE,600V/10UA 1.5A/1.2V	
9	DTSB130	D302	DIODE,SCHOTTKY 30V 1A	
10	DTUZ-18BSB	D110, D111 D321, D322	DIODE,ZENER UZ-18BSB	
11	DTUZ-5.1BSB	D611, D612	DIODE,ZENER UZ-5.1BSB TAP	
12	DTUZ-5.6BSB	D508	DIODE,ZENER UZ-5.6BSB TAP	
13	DTUZ-8.2BSB	D315	DIODE,ZENER UZ-8.2BSB TAP	
14	DT1N4002	D201, D410	DIODE,100V 1.0A TAP	
15	DT1N4004	D504, D506	DIODE,400V 1.0A TAP	
16	DT1N4148	D101, D102 D202, D304 D305, D306 D307, D313 D401~D403 D411~D415 D507, D509 D510, D605 D606~D609	DIODE,1N4148 TAPING	
17	DT1N4936	D104, D303 D310, D311 D501, D502 D505	DIODE,400V 1.0A 1N4936	
18	DT1N4937	D103	DIODE,1N4937 TAPING	
19	DT1R5GU41	D109	DIODE,1R5GU41 TAPING	
20	E42019094010	B302, B404	CORE,BEAD HF55BTL3.5*4.5R	
21	E42019099010	B301, B401 B402, B403 B405, B406	BEAD CORE	
22	E44007011070	C401~C403 C410, C416 C417, 418 C614	CAP-MCD,Z5U 50V 0.1UF Z	
23	RD-2P0T01R0J	R224	RES-CF,RD 1/2W 1.0 OHM J	
24	RD-2P0T01R2J	R348	RES-CF,RD 1/2W 1.2 OHM J	
25	RD-2P0T0100J	R349	RES-CF,RD 1/2W 10 OHM J	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
26	RD-2P0T0101J	R126	RES-CF,RD 1/2W 100 OHM J	
27	RD-2P0T0104J	R381	RES-CF,RD 1/2W 100K OHM J	
28	RD-2P0T0105J	R101	RES-CF,RD 1/2W 1M OHM J	
29	RD-2P0T0121J	R347	RES-CF,RD 1/2W 120 OHM J	
30	RD-2P0T0122J	R602	RES-CF,RD 1/2W 1.2K OHMJ	
31	RD-2P0T0152J	R361, R377	RES-CF,RD 1/2W 1.5KOHM J	
32	RD-2P0T0181J	R132, R223	RES-CF,RD 1/2W 180 OHM J	
33	RD-2P0T0182J	R379	RES-CF,RD 1/2W 1.8K OHM J	
34	RD-2P0T02R2J	R221	RES-CF,RD 1/2W 2.2 OHM J	
35	RD-2P0T0221J	R337	RES-CF,RD 1/2W 220 OHM J	
36	RD-2P0T0244J	R102	RES-CF,RD 1/2W 240KOHM J	
37	RD-2P0T0273J	R501	RES-CF,RD 1/2W 27K OHM J	
38	RD-4P0T01R5J	R225	RES-CF,RD 1/4W 1.5 OHM	
39	RD-4P0T0100J	R344	RES-CF,RD 1/4W 10 OHM J	
40	RD-4P0T0101J	R211, R654 R655, R656	RES-CF,RD 1/4W 100 OHM J	
41	RD-4P0T0102J	R119, R122 R129, R213 R214, R218 R229, R311 R319, R335 R386, R389 R390, R505 R515	RES-CF,RD 1/4W 1K OHM J	
42	RD-4P0T0103J	R204, R302 R323, R331 R332, R339 R340, R341 R393, R405 R406, R430 R508, R626 R627, R628	RES-CF,RD 1/4W 10K OHM J	
43	RD-4P0T0104J	R374	RES-CF,RD 1/4W 100K OHM J	
44	RD-4P0T0105J	R429, R514 R540, R617	RES-CF,RD 1/4W 1.0M OHM J	
45	RD-4P0T0114J	R383	RES-CF,RD 1/4W 110K OHM J	
46	RD-4P0T0123J	R219, R327 R330, R502 R643	RES-CF,RD 1/4W 12K OHM J	
47	RD-4P0T0152J	R356, R610	RES-CF,RD 1/4W 1.5K OHM J	
48	RD-4P0T0153J	R308, R310 R369, R372 R512, R609	RES-CF,RD 1/4W 15K OHM J	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
		R616		
49	RD-4P0T0154J	R113, R115	RES-CF,RD 1/4W 150K OHM J	
		R352, R355		
		R366, R639		
50	RD-4P0T0155J	R391	RES-CF,RD 1/4W 1.5M OHM J	
51	RD-4P0T0181J	R452~R454	RES-CF,RD 1/4W 180 OHM J	
52	RD-4P0T0182J	R228, R378	RES-CF,RD 1/4W 1.8K OHM J	
53	RD-4P0T0183J	R367, R503	RES-CF,RD 1/4W 18K OHM J	
54	RD-4P0T0202J	R203, R613	RES-CF,RD 1/4W 2.0K OHM J	
		R614, R615		
		R623~R625		
		R631, R651		
55	RD-4P0T0203J	R611, R612	RES-CF,RD 1/4W 20K OHM J	
56	RD-4P0T0204J	R116	RES-CF,RD 1/4W 200K OHM J	
57	RD-4P0T0220J	R120, R346	RES-CF,RD 1/4W 22 OHM J	
		R360		
58	RD-4P0T0222J	R511	RES-CF,RD 1/4W 2.2K OHM J	
59	RD-4P0T0223J	R209, R359	RES-CF,RD 1/4W 22K OHM J	
60	RD-4P0T0224J	R320	RES-CF,RD 1/4W 220K OHM J	
61	RD-4P0T0242J	R510	RES-CF,RD 1/4W 2.4K OHM J	
62	RD-4P0T0243J	R404	RES-CF,RD 1/4W 24K OHM J	
63	RD-4P0T0272J	R324, R342	RES-CF,RD 1/4W 2.7K OHM J	
64	RD-4P0T0273J	R117, R121	RES-CF,RD 1/4W 27K OHM J	
		R513		
65	RD-4P0T0274J	R371	RES-CF,RD 1/4W 270K OHM J	
66	RD-4P0T0331J	R657, R658	RES-CF,RD 1/4W 330 OHM J	
67	RD-4P0T0332J	R208	RES-CF,RD 1/4W 3.3K OHM J	
68	RD-4P0T0333J	R304, R305	RES-CF,RD 1/4W 33K OHM J	
69	RD-4P0T0391J	R455, R456	RES-CF,RD 1/4W 390 OHM J	
		R457		
70	RD-4P0T0392J	R207, R321	RES-CF,RD 1/4W 3.9K OHM J	
		R326, R328		
		R376		
71	RD-4P0T0393J	R205, R212	RES-CF,RD 1/4W 39K OHM J	
		R215, R312		
		R638, R640		
		R641, R642		
		R644, R645		
		R646, R647		
		R648, R649		
		R650		
72	RD-4P0T0394J	R509	RES-CF,RD 1/4W 390K OHM J	
73	RD-4P0T04R7J	R336, R382	RES-CF,RD 1/4W 4.7 OHM J	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
		R601		
74	RD-4P0T0432J	R380, R407	RES-CF,RD 1/4W 4.3K OHM J	
		R519		
75	RD-4P0T0433J	R306	RES-CF,RD 1/4W 43K OHM J	
76	RD-4P0T0470J	R111	RES-CF,RD 1/4W 47 OHM J	
77	RD-4P0T0471J	R112	RES-CF,RD 1/4W 470 OHM J	
78	RD-4P0T0472J	R114, R334	RES-CF,RD 1/4W 4.7K OHM J	
		R384, R401		
		R606		
79	RD-4P0T0473J	R350, R351	RES-CF,RD 1/4W 47K OHM J	
		R353, R354		
		R504, R506		
80	RD-4P0T0513J	R516	RES-CF,RD 1/4W 51K OHM J	
81	RD-4P0T0560J	R118	RES-CF,RD 1/4W 56 OHM J	
82	RD-4P0T0561J	R105, R210	RES-CF,RD 1/4W 560 OHM J	
83	RD-4P0T0562J	R220, R222	RES-CF,RD 1/4W 5.6K OHM J	
		R307, R427		
		R428, R603		
84	RD-4P0T0563J	R517	RES-CF,RD 1/4W 56K OHM J	
85	RD-4P0T0681J	R128	RES-CF,RD 1/4W 680 OHM J	
86	RD-4P0T0682J	R227, R518	RES-CF,RD 1/4W 6.8K OHM J	
87	RD-4P0T0683J	R206, R309	RES-CF,RD 1/4W 68K OHM J	
88	RD-4P0T0684J	R392	RES-CF,RD 1/4W 680K OHM J	
89	RD-4P0T0750J	R449, R450	RES-CF,RD 1/4W 75 OHM J	
		R451		
90	RD-4P0T0752J	R33, R370	RES-CF,RD 1/4W 7.5K OHM J	
91	RD-4P0T0753J	R373	RES-CF,RD 1/4W 75KOHM J	
92	RD-4P0T0822J	R301, R608	RES-CF,RD 1/4W 8.2K OHM J	
93	RD-4P0T0913J	R322, R325	RES-CF,RD 1/4W 91K OHM J	
		R329		
94	RD-8P0T0101J	R659	RES-CF,RD 1/8W 100 OHM J	
95	RD-8P0T0472J	R652, R653	RES-CF,RD 1/8W 4.7K OHM J	
96	RN-4P0T1002F	R317	RES-MF,RN 1/4W 10K OHM F	
97	RN-4P0T1802F	R303	RES-MF,RN 1/4W 18K OHM F	
98	RN-4P0T2202F	R316	RES-MF,RN 1/4W 22KOHM F	
99	RN-4P0T2702F	R315	RES-MF,RN 1/4W 27K OHM F	
100	RN-4P0T3002F	R385	RES-MF,RN 1/4W 30KOHM F	
101	RN-4P0T7501F	R313	RES-MF,RN 1/4W 7.5KOHM F	
12	RS01P0T01R0J	R357, R358	RES-MOF,RS 1W 1.0 OHM J	
103	RS01P0T0100J	R345	RES-MOF,RS 1W 10 OHM J	
104	RS01P0T0103J	R607	RES-MOF,RS 1W 10K OHM J	
105	RS01P0T0270J	R125	RES-MOF,RS 1W 27 OHM J	
106	RS01P0T0273J	R109	RES-MOF,RS 1W 27K J TAPPI	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
107	RS01P0T0393J	R107, R108	RES-MOF,RS 1W 39K OHM J	
108	2468209002	R362, R363 R364	82 OHM 1 W J R	
109	304010056303		PCB-SINGLE,5864F MAIN F1	
110	3500100422	L401, L402	INDU-FIX,ELEMH220KA 22UH	
111	3753000024	J101~J110 J111~J121 J301~J350 J352~J364 J366~J378 J380~J393 J397~J399 J404, J405 J407~J419 J501~J515 J517~J522 J524 J527~J535 J537~J542 J601~J613 J615 J617~J621 J623~J627	WIRE JUM,52MM TAP. SDA 1/	
112	CC45CT1H330K	C422, C636 C637	CAP-CD,50V 33PF K	
113	CE04BT1C101M	C308, C329 C435, C436	CAP-EL,SMS 16V 100UF M	
114	CE04BT1C102M	C317	CAP-EL,SMS 16V 1000UF M	
115	CE04BT1C220M	C312, C419	CAP-EL,SMS 16V 22UF M	
116	CE04BT1C221M	C411, C505 C601	CAP-EL,SMS 16V 220UF M	
117	CE04BT1C222M	C206	CAP-EL,SMS 16V 2200UF M	
118	CE04BT1C331M	C408	CAP-EL,SMS 16V 330UF M	
119	CE04BT1C471M	C124	CAP-EL,SMS 16V 470UF M	
120	CE04BT1E101M	C121, C335 C337	CAP-EL,SMS 25V 100UF M	
121	CE04BT1E220M	C208	CAP-EL,SMS 25V 22UF M	
122	CE04BT1E470M	C315, C333	CAP-EL,SMS 25V 47UF M	
123	CE04BT1H010M	C129, C309 C404~C406 C618, C619	CAP-EL,SMS 50V 1UF M	
124	CE04BT1H100M	C131, C203 C409, C439	CAP-EL,SMS 50V 10UF M	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
		C611, C632		
		C633, C635		
125	CE04BT1H101M	C211	CAP-EL,SMS 50V 100UF M	
126	CE04BT1H2R2M	C360, C613	CAP-EL,SMS 50V 2.2UF M	
		C628		
127	CE04BT1H221M	C123, C209	CAP-EL,SMS 50V 220UF M	
128	CE04BT1H3R3M	C620	CAP-EL,SMS 50V 3.3UF M	
129	CE04BT1H4R7M	C356, C407	CAP-EL,SMS 50V 4.7UF M	
		C425, C615		
130	CE04BT1H470M	C316	CAP-EL,SMS 50V 47UF M	
131	CE04BT1H6R8M	C307	CAP-EL,SMS 50V 6.8UF M	
132	CE04BT1V331M	C506	CAP-EL,SMS 35V 330UF M	
133	CE04BT2A100M	C631	CAP-EL,SMS 100V 10UF M	
134	CE04BT2A101M	C118, C119	CAP-EL,SMS 100V 100UF M	
135	CE04BT2C010M	C502, C504	CAP-EL,SMS 160V 1UF M	
136	CE04BT2E100M	C507	CAP-EL,SMS 250V 10UF M	
137	CE04DT1H100M	C202	CAP-EL,SMS-BP 50V 10UF M	
138	CF93BT1J105J	C353	CAP-MPE,63V 1UF J	
139	CF93BT1J224J	C313, C327	CAP-MPE,63V 0.22UF J	
140	CF93BT1J334J	C107, C213	CAP-MPE,63V 0.33UF J	
141	CF93BT1J474J	C328	CAP-MPE,63V 0.47UF J	
142	CG45FT1H104Z	C106, C207	CAP-CD,50V 0.1UF Z	
		C210, C304		
		C305, C314		
		C318		
		C321~C326		
		C330, C334		
		C355, C357		
		C423, C437		
		C445		
		C606~C608		
		C612, C616		
		C617		
		C621~C624		
143	CK45BT1H101K	C367, C368	CAP-CD,50V 100PF K	
		C627		
144	CK45BT1H102K	C364, C610	CAP-CD,50V 1000PF K	
145	CK45BT1H103K	C358, C421	CAP-CD,50V 0.01UF K	
146	CK45BT1H271K	C363	CAP-CD,50V 270PF K Y5P	
147	CK45BT1H681K	C320, C362	CAP-CD,50V 680PF K	
148	CK45BT3A101K	C122	CAP-CD,1KV 100PF 10%	
149	CK45BT3A181K	C132	CAP-CD,1KV 180PF K	
150	CK45BT3A331K	C349	CAP-CE,1KV 330PF K TAP	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
151	CK45BT3A681K	C332	CAP-CD,1KV 680PF K TAP	
152	CQ92BT2A102J	C336, C605 C629	CAP-PE,100V 0.001UF J	
153	CQ92BT2A103J	C110, C130 C303, C311	CAP-PE,100V 0.01UF J	
154	CQ92BT2A104K	C215, C301 C331, C350 C361, C501 C604	CAP-PE,100V 0.1UF K TAP	
155	CQ92BT2A152J	C111, C319	CAP-PE,100V 1500PF J	
156	CQ92BT2A182J	C109	CAP-PE,100V 1800PF J	
157	CQ92BT2A222J	C105	CAP-PE,100V 0.0022UF J	
158	CQ92BT2A223J	C343, C345 C359	CAP-PE,100V 0.022UF J	
159	CQ92BT2A272J	C369	CAP-PE,100V 0.0027UF J	
160	CQ92BT2A332J	C108, C366 C438	CAP-PE,100V 3300PF J	
161	CQ92BT2A333K	C214	CAP-PE,100V 0.033UF K	
162	CQ92PT2A471J	C205	CAP-PP,100V 470PF J	
163	CQ93PT2A681J	C310	CAP-PP,100V 680PF J TAP	
164	E42007027050	C101, C102	CAP-CD,AC 400V 2200PF M	
165	E42007027070	C115, C116	CAP-CD,AC 400V 4700PF M	
166	E42019132020	L305	INDUCTOR 8200UH K TAP RAD	
167	E42027039010	SW601~SW608	SWITCH TACT,5MM 160GF VER	
168	E42076013010	F101	FUSE CLIP,TAPING	
169	TTKRC102M	Q104, Q105 Q107, Q303 Q318, Q504 Q602	TR,SWITCHING KRC102M	
170	TTKTA1275Y	Q317, Q506	TR,KTA1275Y	
171	TTKTA200Y	Q314, Q502	TR,KTA200Y TAP	
172	TTKTA966AY	Q103, Q308	TR,KTA1273Y	
173	TTKTC1815Y	Q202~Q205 Q301, Q306 Q321, Q322 Q501, Q505 Q601, Q603 Q604, Q605	TR,KTC3198Y	
174	TTKTC200Y	Q313	TR,KTC200Y TAP	
175	TTKTC3205Y	Q307	TR,SWITCHING KTC3205Y	
176	TTKTC3206	Q304, Q305	TR,SWITCHING KTC3206	
177	TTKTC3400Y	Q503	TR,KTC3400Y NPN	
178	TT2N3904S	Q319, Q320	TR,2N3904 TAP	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
179	TT2N7000	Q312	TR,2N7000	
180	UKIA7045P	U603	IC, KIA7045P	
181	2001010081	C113	CAL-AL,100UF 63V M 10*12.	
182	2003380011	C503	0.33 UF 100 V M 5.0*11.0	
183	2004700088	C348	CAL-AL,47UF 200V M 12.5*2	
184	2004710044	C120	CAL-AL,470UF 35V M 10*20	
185	2141040020	C216	CAP-M-P,0.1UF 250V J RAD	
186	2171530011	C351, C354	0.015 UF 200 V J RAD	
187	2172230011	C346	CAP-P-F,0.022UF 250V J RA	
188	2173330009	C114	CAP-P-F,0.033UF 400V K RA	
189	2173330010	C352	CAP-P-F,0.033UF 250V J RA	
190	2174720014	C340	CAP-P-F,4700PF 630V J RAD	
191	3500100420	L301	INDUCTOR FIX,56UH K TAP R	
192	3530200360	X601	VIB-QUARTZ,HC-49/U 4MHZ 4	
193	E42015045090	VR101	V-SEMI,VERT 0.1W B10K TAP	
194	E42015045120	VR301	V-SEMI,VERT 0.1W B50K TAP	
195	UKA3842B	U101	IC,CURRENT PWM CONTROLLER	
196	ULM358N	U302	IC,OP-AMP LM358N	
197	UMC141540P4	U403	IC,OSD MC141540P4	
198	U24LC04BP	U602	IC,EEPROM 24LC04B-P	
199	U24LC21P	U604	IC,EEPROM 24LC21P	
200	3720101053	P102, P501 P502, W301	CONN-P,1P DEBP-230 3.15MM	
201	6130014100	Q311, T501	EYELET,2.7PAI BRASS T=0.4	
202	B4211011102A	BS01	BRKT SHIELD,HL-5864	
203	B4211516201B	LD101	HOLDER LED, POWER	
204	CE69TN2G221M	C104	CAP-EL,SHL 400V 220UF M	
205	DNDTV32F-1500B	D308	DIODE,DAMPER 1500V 6A ISO	
206	DND3SBA60	BD101	DIODE,BRIDGE D3SBA60	
207	DN339-1UYUGC	LD101	DIODE,LED EL339-1UYUGC/T1	
208	DTS3L40	D107, D108	DIODE,S3L40 400V 3A	
209	DTS3L60	D105, D309 D320	DIODE,S3L60 600V 2.2A	
210	DT3TH41	D318	DIODE,DAMPER,1500V 3.0A	
211	E42007009090	C103	CAP-X,250VAC 0.22UF M	
212	E42019105040	L303	CHOKE COIL,110UH DR1420 4	
213	E42019105050	L304	CHOKE COIL,190UH DR1420 5	
214	E42025012060	F101	FUSE,TIME LAG 19181 3.15A	
215	E42029086010	NF101	FILTER,EMI IX-0342-P	
216	E42043007010	P302	CONN POST,2P 5267-02A	
217	E42043007050	P601	CONN POST 6P 5267-06A	
218	E42043076010	DSB601	CONN,D-SUB 15P 3R FEMALE	
219	M11143008012	D308, Q102	SCREW,BIN(+) M3*8 MSZPC	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
220	M11173006012	LF101	SCREW,FLAT(+) M3*6	
221	M31100030012	D308, Q102	NUT HEX,6N1-3 MSZPC	
222	2171840002	C342	CAP-P-F,0.18UF 250V J FOR	
223	2172740001	C341, C344	0.27UF 250V J FOR	
224	2173340002	C339	CAP-PF,0.33UF 250V J FOR	
225	2174710004	C112	CAP-P-F 470PF 1600V J RAD	
226	2174720013	C338	CAP-PF,4700PF 1600V J FOR	
227	2502001002	AR601	2KOHM 0.125 W J SIP 9P	
228	2502001003	AR602	2KOHM 0.125 W J SIP 6P	
229	3100500087	D312	DI-SW,S2L60-4004P15 LEAD	
230	3114000066	Q102	FET,2SK2333-4112 LEAD	
231	3500100501	L302	INDUCT-FIX,DR1215/26.5T/2	
232	3520200073	L101	FILTER LC,SQE2930 30MH MI	
233	3725001553	P404	CONN-A,VIDEO CABLE 6P*6P	
234	3725001554	P301	CONN-A,VIDEO CABLE 7P*7P	
235	3725001555	P105	CONN-A,CONN ASSY 4P*4P FL	
236	3755000445		WIRE-ASS'Y,100MM BK 18	
237	6124020200	Q102	HEAT SINK V ASSY,A1050	
238	6120013700		SOLDER GRIP(SPTE T=0.5)	
239	6124020000		HEAT SINK V A1050P	
240	B4211505301A	SW101	GUIDE POWER SWITCH	
241	B4212501002A	Q316	HEAT SINK PWR,ANODIZE 40M	
242	E42027014010	SW301	LEVER SWITCH,30'C 3P	
243	E42027035010	SW101	SWITCH PWR,1101A20TS-B	
244	E42031090040	T102	TRANS SYNC,UU1116	
245	E42048066010	T501	FBT,DNF-FN1505 H*-5864F	
246	E42077084090	RT101	THERMISTOR 18 OHM 18D-13	
247	M11143008012	Q311, Q315 Q316	SCREW,BIN(+) M3*8 MSZPC	
248	M13414010012	T501	SCREW ST2 PAN(+) 4*10 MZC	
249	M31100030012	Q311	NUT HEX,6N1-3 MSZPC	
250	TNIRF630	Q309, Q310 Q315	MOSFET IRF630 W/BUSHING	
251	TNKTC4368	Q316	TR,VERT.OUTPUT KTC4368	
252	TN2SC4924	Q311	TR,H.DEFLECTION TO-3PML	
253	2562002001	R110	RES-CEM,20K 5W J R	
254	2580338001	R123	RES JUM,0.33 OHM 2 W J S	
255	3411300011	RP101	POSISTOR,ECPBD9ROM290 18	
256	3510200048	T101	TRANS PWR,5864F MAIN	
257	3510300090	T301	TRAN-SW,HDT EI1916 880UH	
258	3710100049	RL301	JS1-12V 12 V 10 A 5	
259	3710100050	RL101	RELAY,12V 10A 5PIN	
260	6124020500	Q315	HEAT SINK POWER,HL-4848F	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
261	6120014000	T501	FENCE SHID FBT ASSY,58**F	
262	B4211008901A	FS02	SOLDER GRIP	
263	6120013900	FS01	FENCE SHIELD FBT T=1.0	
264	M11143008012	U201	SCREW,BIN(+) M3*8 MSZPC	
265	M31100030012	U201	NUT HEX,6N1-3 MSZPC	
266	ULM7805CT	U104	IC,VOL REGULATOR,LM7805CT	
267	UMCT2201Z	U102, U103	PHOTO COUPLER MCT2201Z	
268	UTDA8172	U201	IC,TDA8172 W/BUSHING	
269	6124020200	U201	HEAT SINK V ASSY,A1050	
270	6120013700		SOLDER GRIP(SPTE T=0.5)	
271	6124020000		HEAT SINK V A1050P	
272	E42045208040	W101	WIRE ASSY,RING 85MM GN/YE	
273	E44043048070	U601	IC SOCKET,DIP 40PIN	
274	UKIA7808PI	U404	IC,VOLT REGU.KIA7808PI	
275	UMC13282AP	U401	IC,VIDEO MC13282AP	
276	UMC68HC05BD5	U601	IC,MCU OTP MC68HC05BD5	
277	USTV7778	U301	IC,H/V DEFLECTION STV7778	
278	M17744006012		SCREW,BIN(+) M4*6 MSZPC	
279	610107540001	PM17	CHASSIS MAIN, HL-**48F	
280	6110094700		BKT PCB,HL4848F SECC T=1.	
281	6129027600		SPECIAL,T.T/W(+) 3*8 MSZP	

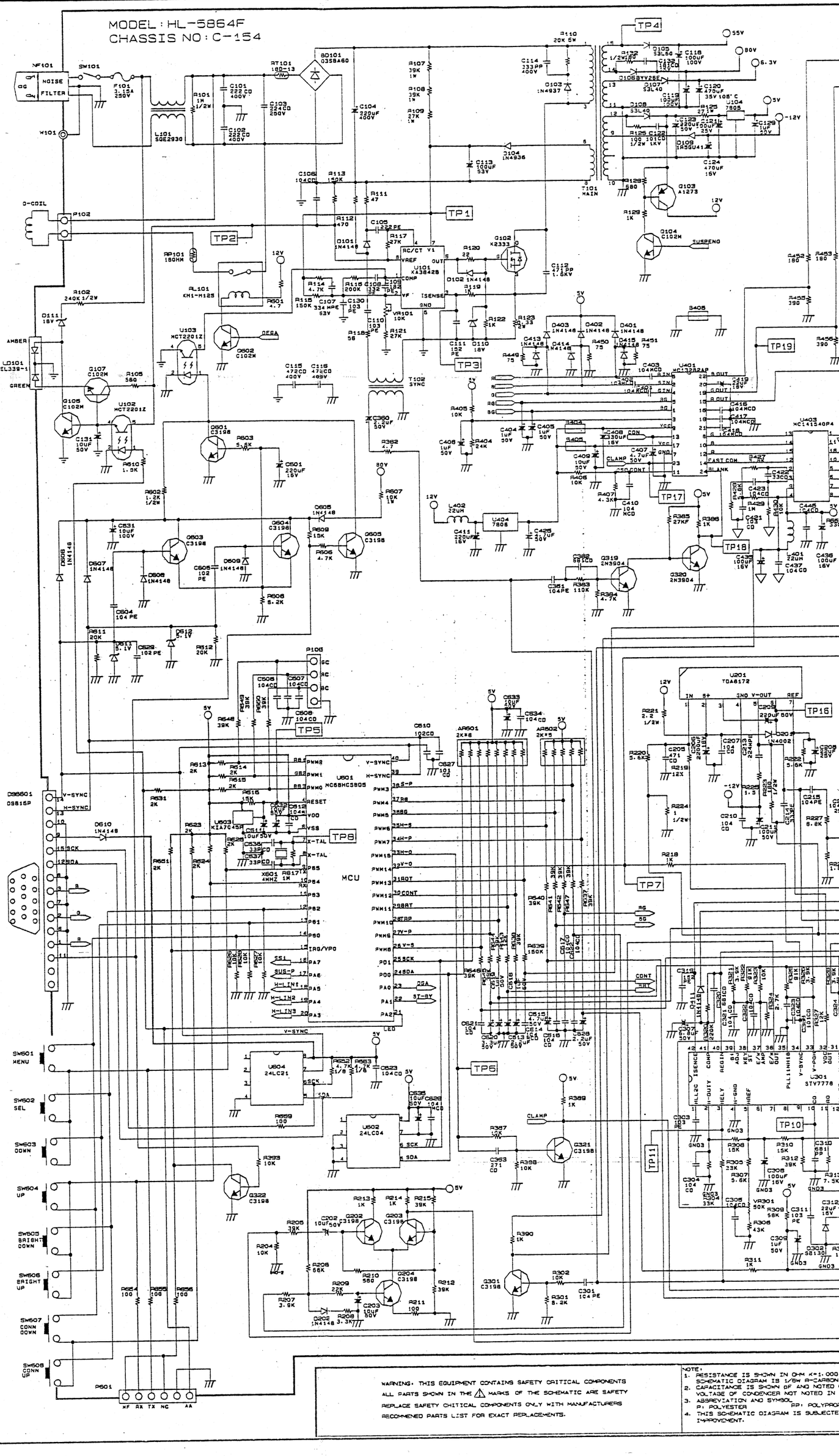
2. PCB CRT BOARD ASSY

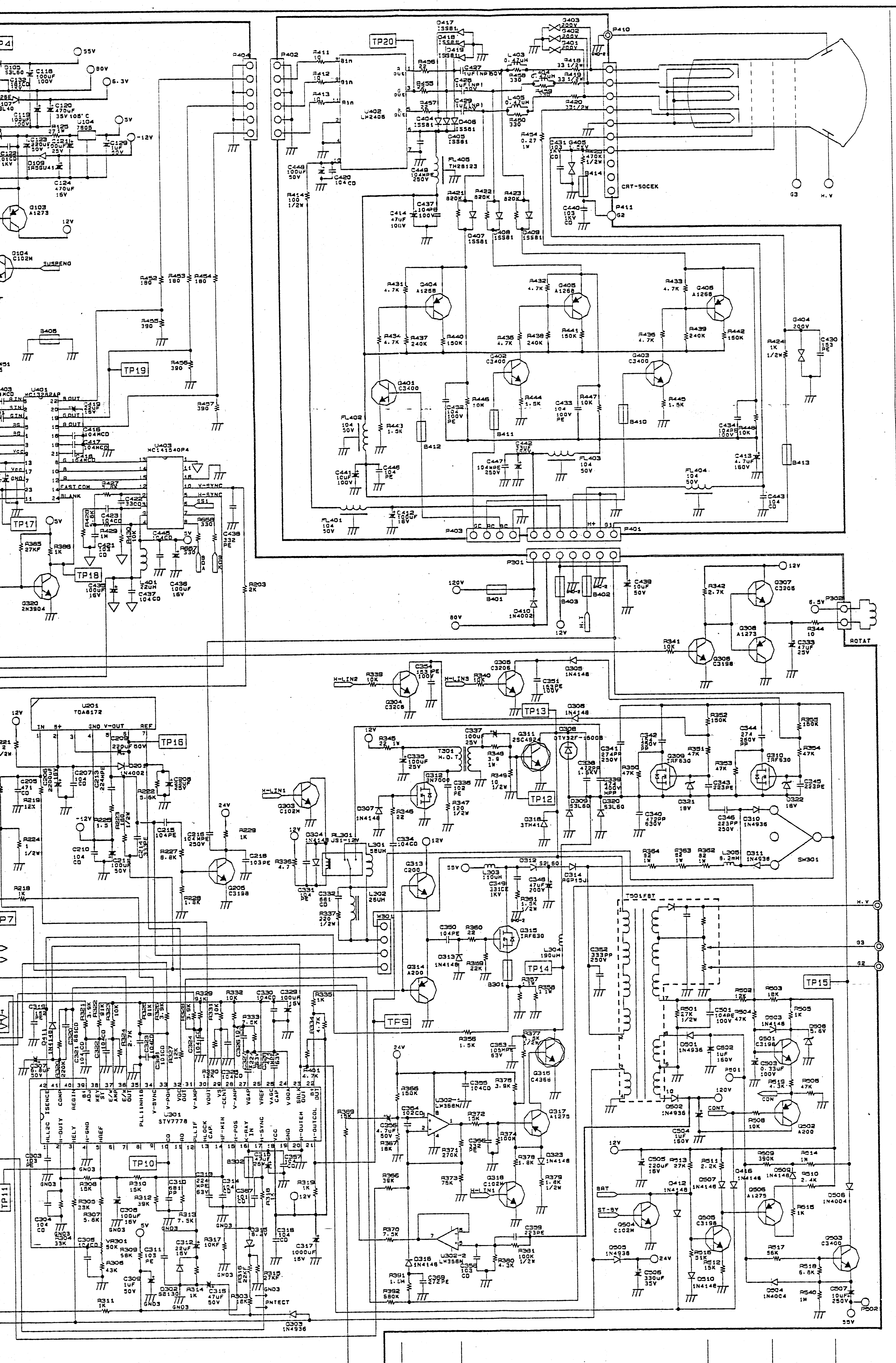
PCB CRT BOARD PART

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
1	B4211011502A		FENCE SHEILD,CRT	
2	E42043096010		CRT SOCKET,033-0-5500-4	
3	E4208412162		PCBA CRT(A6*),HL5864F	
4	E4208412152		PCBA CRT(A5*),HL5864F	
5	E4208412142		PCBA CRT(A4*),HL5864F	
6	DTISS81	D404~D409 D417~D419	DIODE,SWITCHING ISS81	
7	E42019099010	B410~B414	BEAD CORE	
8	RD-2P0T0101J	R414	RES-CF,RD 1/2W 100 OHM J	
9	RD-2P0T0102J	R424	RES-CF,RD 1/2W 1K OHM J	
10	RD-2P0T0330J	R418~R420	RES-CF,RD 1/2W 33 OHM J	
11	RD-2P0T0474J	R425	RES-CF,RD 1/2W 470K OHM J	
12	RD-4P0T0100J	R411~R413	RES-CF,RD 1/4W 10 OHM J	
13	RD-4P0T0103J	R446~R448	RES-CF,RD 1/4W 10K OHM J	
14	RD-4P0T0152J	R443~R445	RES-CF,RD 1/4W 1.5K OHM J	
15	RD-4P0T0154J	R440~R442	RES-CF,RD 1/4W 150K OHM J	
16	RD-4P0T0220J	R455~R457	RES-CF,RD 1/4W 22 OHM J	
17	RD-4P0T0244J	R437~R439	RES-CF,RD 1/4W 240K OHM J	
18	RD-4P0T0331J	R458~R460	RES-CF,RD 1/4W 330 OHM J	
19	RD-4P0T0472J	R431~R434	RES-CF,RD 1/4W 4.7K OHM J	
20	RD-4P0T0824J	R421~R423	RES-CF,RD 1/4W 820K OHM J	
21	RS01P0T0R27J	R454	RES-MOF,RS 1W 0.27 OHM J	
22	304010056401		PCB-SINGLE,5864F CRT F1 1	
23	3500100473	L403~L405	INDUCT-FIX,AL03TTBR47M M	
24	3753000024	J422~J425 J427, J428	WIRE JUM,52MM TAP. SDA 1/	
25	CE04BT1C101M	C412	CAP-EL,SMS 16V 100UF M	
26	CE04BT2A100M	C441	CAP-EL,SMS 100V 10UF M	
27	CE04BT2C4R7M	C413	CAP-EL,SMS 160V 4.7UF M	
28	CE04HT1H010M	C427~C429	CAP-EL,NHPF 50V 1UF M TAP	
29	CE04IT1H101M	C448	CAP-EL,KME 50V 100UF M	
30	CE04TN2A470M	C414	CAP-EL,SHL 100V 47UF M	
31	CE04TN2C330M	C442	CAP-EL,SHL 160V 33UF M	
32	CG45FT1H104Z	C420, C443	CAP-CD,50V 0.1UF Z	
33	CQ92BT2A104K	C432~C434 C437, C446	CAP-PE,100V 0.1UF K TAP	
34	CQ92BT2A153J	C430	CAP-PE,100V 0.015UF J	
35	E42029012020	FL405	NOISE FILTER,TH28123MA	
36	E42029026410	FL401~FL404	FILTER,EMI 50V 0.1UF M	
37	TTKTA1268BL	Q404~Q406	TR,LOW NOISE KTA1268BL	
38	TTKTC3400Y	Q401~Q403	TR,KTC3400Y NPN	
39	3720101053	P410	CONN-P,1P DEBP-230 3.15MM	

NUM.	PART NUMBER	LOCATION	DESCRIPTION	REMARK
40	3720101104	P411	CONN M,17MM 1	
41	CK45BN3A103K	C431, C440	CAP-CD,1KV 0.01UF K	
42	E42039003020	G401~G404	SPARK,GAP DSP-301N-A21F	
43	M11143008012	U402	SCREW,BIN(+) M3*8 MSZPC	
44	2141040020	C447, C449	CAP-M-P,0.1UF 250V J RAD	
45	3200000560	U402	IC-LIN,LM2405 TO2	
46	3411100043	G405	VARISTOR,S23 1500V 1500V	
47	3720101108	P402	POST 6P WHT 5045-06A	
48	3720101205	P403	CONN-M,5045-4A 4	
49	3720101206	P401	CONN-M,5045-7A 7	
50	6124021700		H-SINK,VIDEO HL-5864F	

SCHEMATIC DIAGRAM

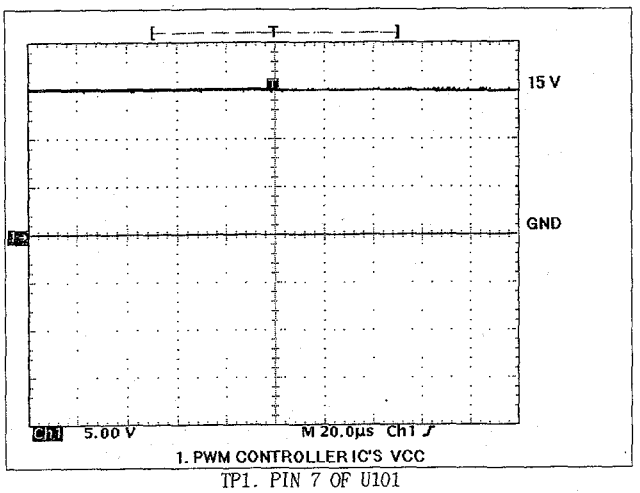




NOTE:
1. RESISTANCE IS SHOWN IN OHM K=1,000 M=1,000,000 RATED POWER OF RESISTOR NOT NOTED IN SCHEMATIC DIAGRAM IS 1/6W R-CARBON.
2. CAPACITANCE IS SHOWN pF AND NOTED CAPACITANCES IS SHOWN uF. uF=1,000,000pF RATED VOLTAGE OF CONDENCER NOT NOTED IN SCHEMATIC DIAGRAM IS 50V.
3. ABBREVIATION AND SYMBOL
   P: POLYESTER PP: POLYPROPYLENE
4. THIS SCHEMATIC DIAGRAM IS SUBJECTED TO CHANGE WITHOUT NOTICE FOR FURTHER IMPROVEMENT.

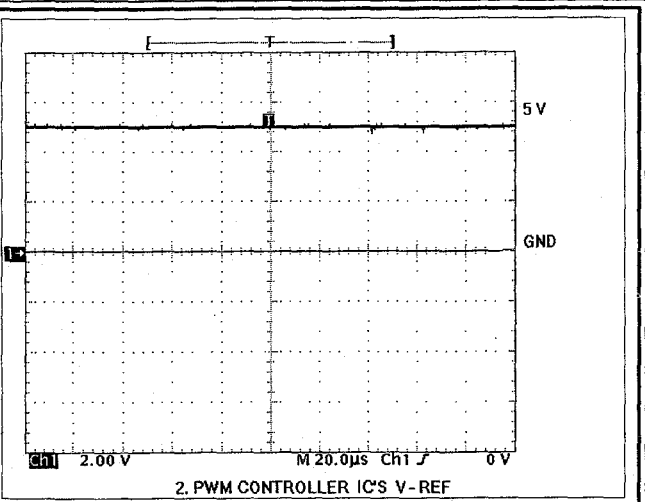
DWG. REV.	A	DESCRIPTION		DOC. NO.	DATE	APPROVAL
DWG. NO.	E42095218	SIGNATURE		DATE	INSP	SHEET NO.
TITLE	HL-5864F	DWN	Y. S YOON	199605.18		
		CHK	Y. C KIM	199605.18		
HYUNDAI ELECTRONICS		APP	M. H HAM	199605.18		

WAVEFORM



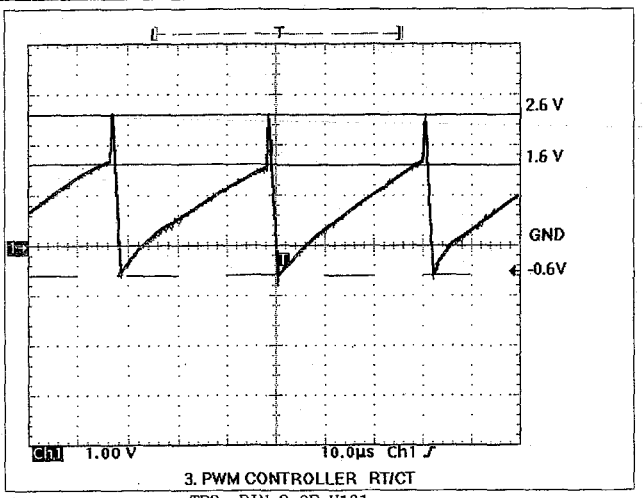
1. PWM CONTROLLER IC'S VCC

TP1. PIN 7 OF U101



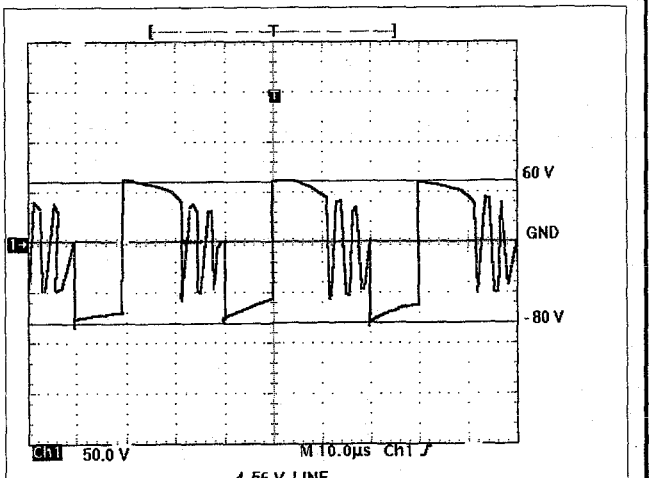
2. PWM CONTROLLER IC'S V-REF

TP2. PIN 8 OF U101



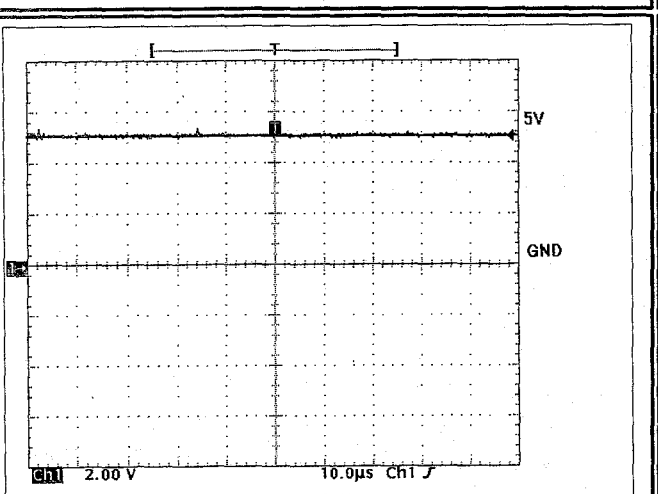
3. PWM CONTROLLER RT/CT

TP3. PIN 3 OF U101



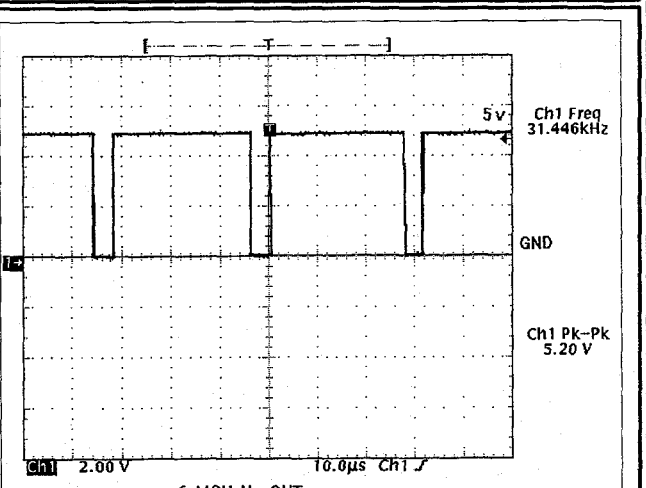
4. 56 V LINE

TP4. 55 V LINE



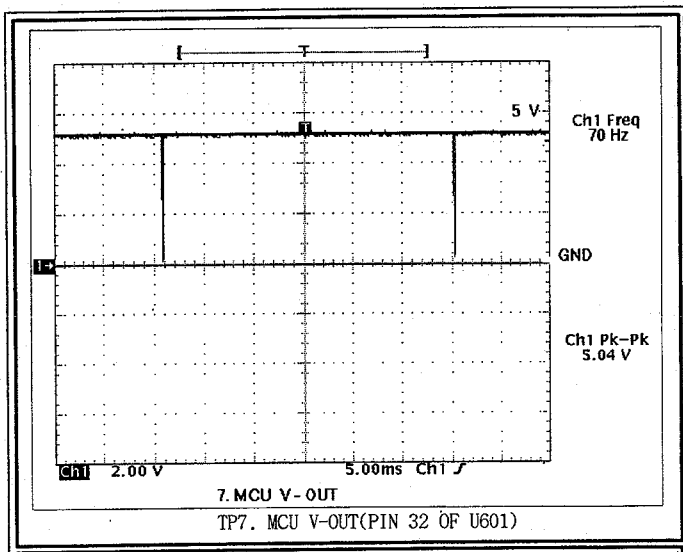
5. MCU RESET

TP5. MCU RESET(PIN 4 OF U601)

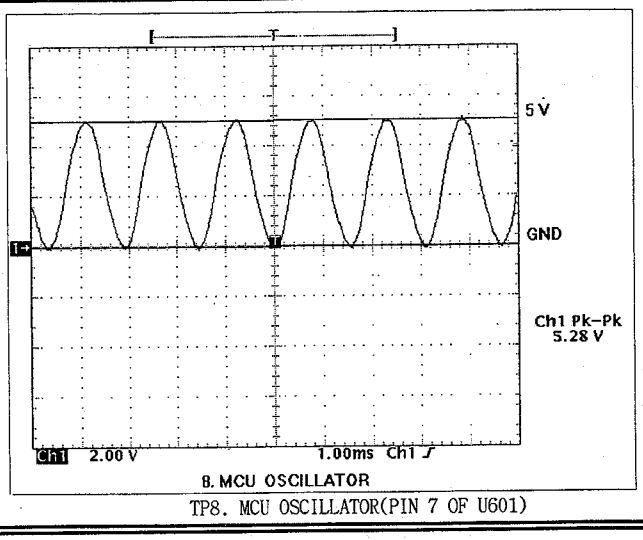


6. MCU H- OUT

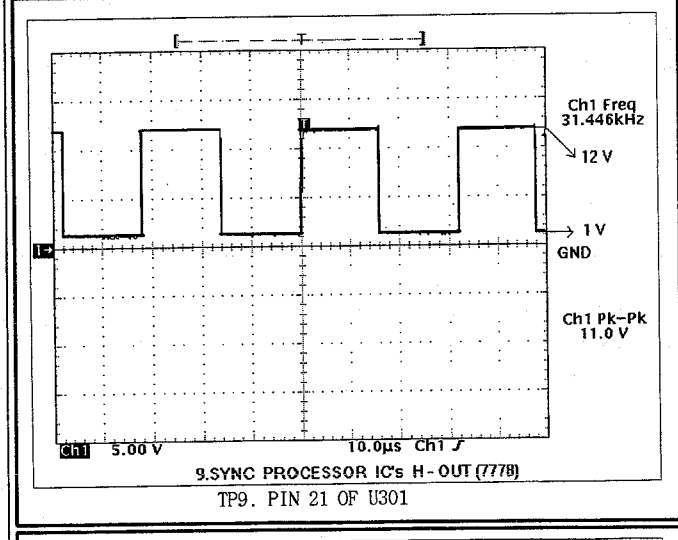
TP6. MCU H-OUT(PIN 33 OF U601)



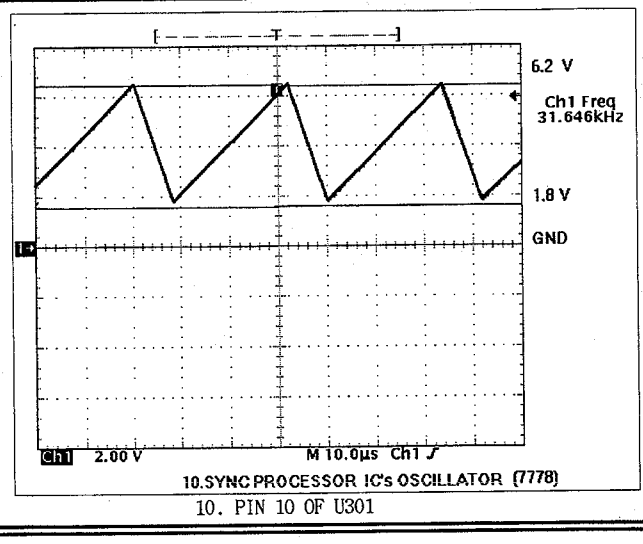
TP7. MCU V-OUT(PIN 32 OF U601)



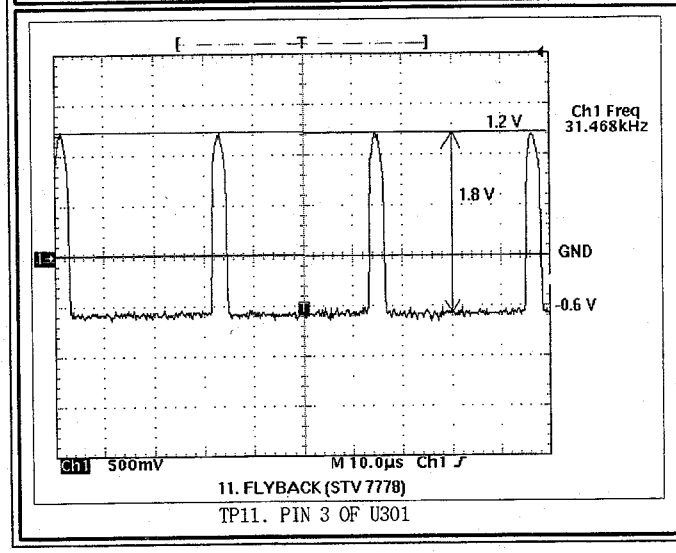
TP8. MCU OSCILLATOR(PIN 7 OF U601)



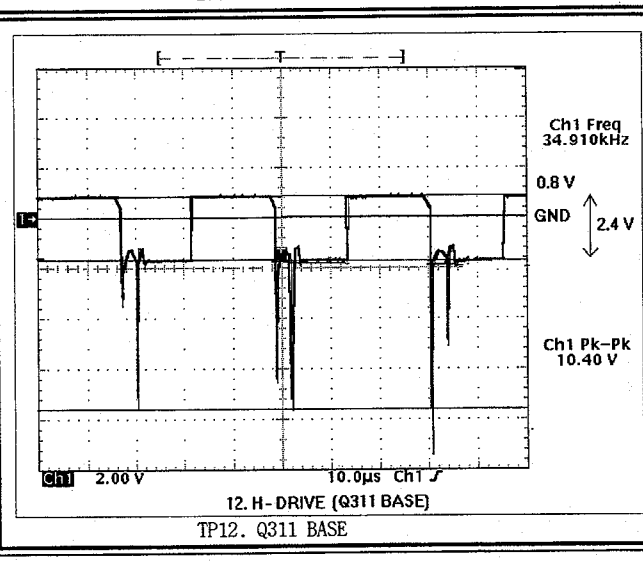
TP9. PIN 21 OF U301



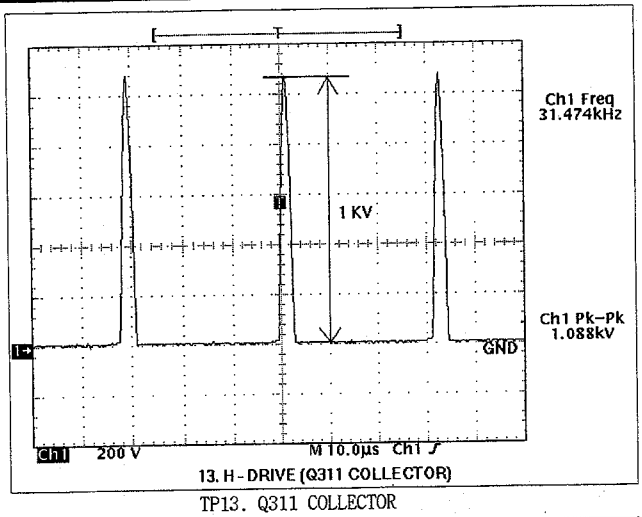
10. PIN 10 OF U301



TP11. PIN 3 OF U301

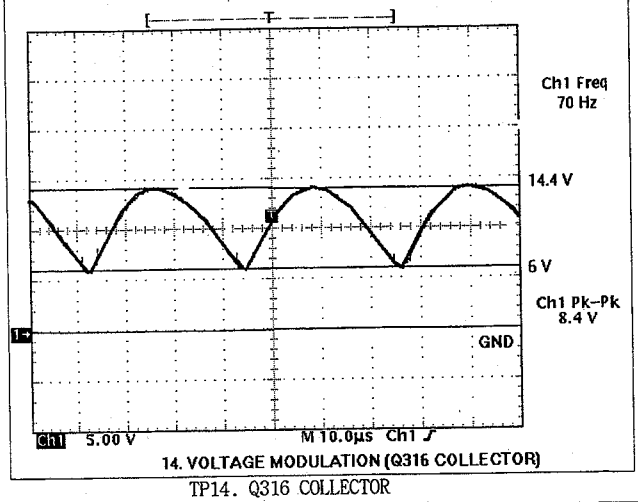


TP12. Q311 BASE



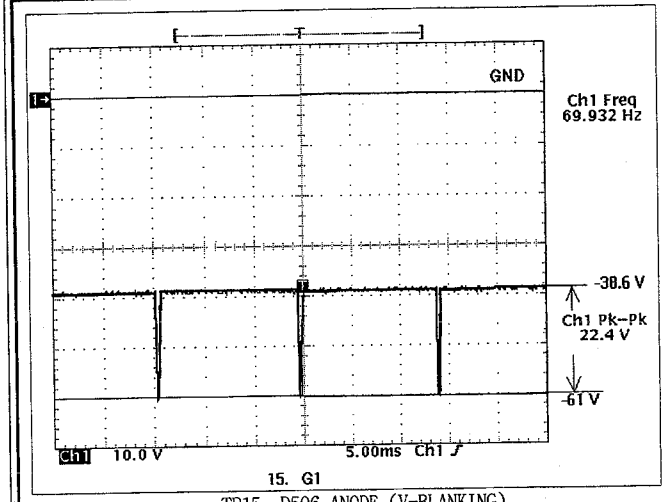
13. H-DRIVE (Q311 COLLECTOR)

TP13. Q311 COLLECTOR



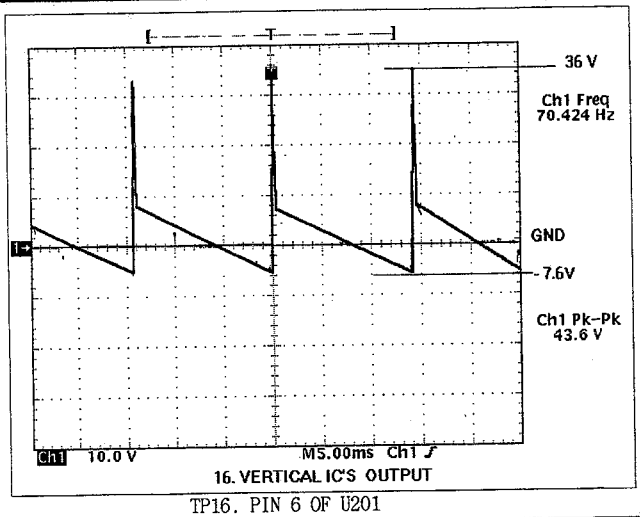
14. VOLTAGE MODULATION (Q316 COLLECTOR)

TP14. Q316 COLLECTOR



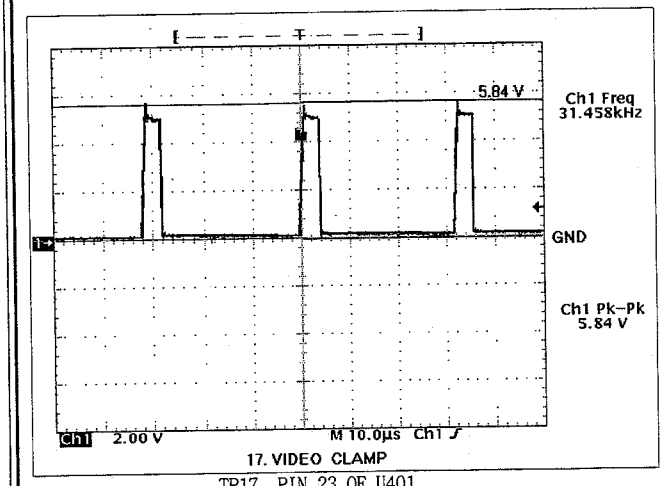
15. G1

TP15. D506 ANODE (V-BLANKING)



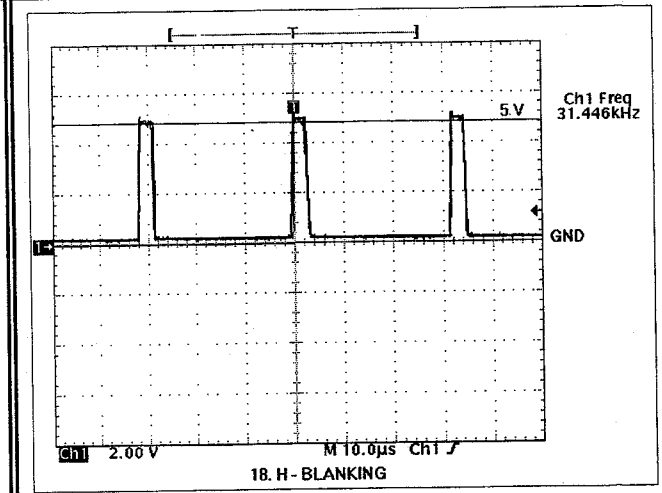
16. VERTICAL IC'S OUTPUT

TP16. PIN 6 OF U201



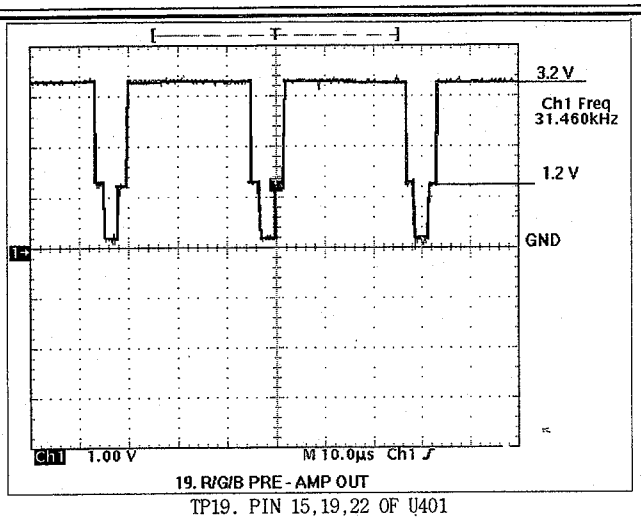
17. VIDEO CLAMP

TP17. PIN 23 OF U401



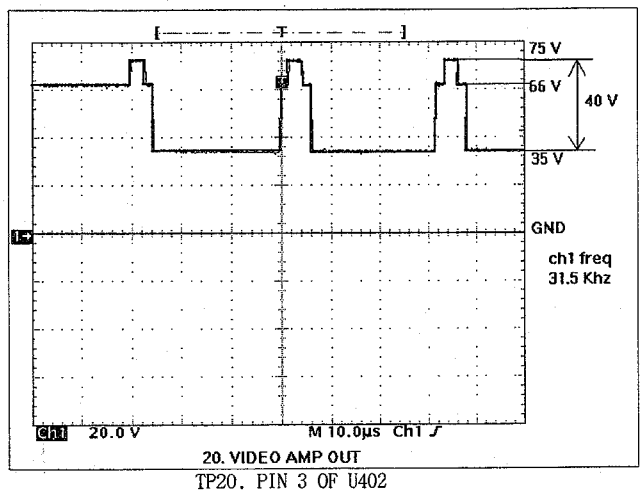
18. H-BLANKING

TP18. PIN 24 OF U401



19. R/G/B PRE-AMP OUT

TP19. PIN 15,19,22 OF U401
(R/G/B)

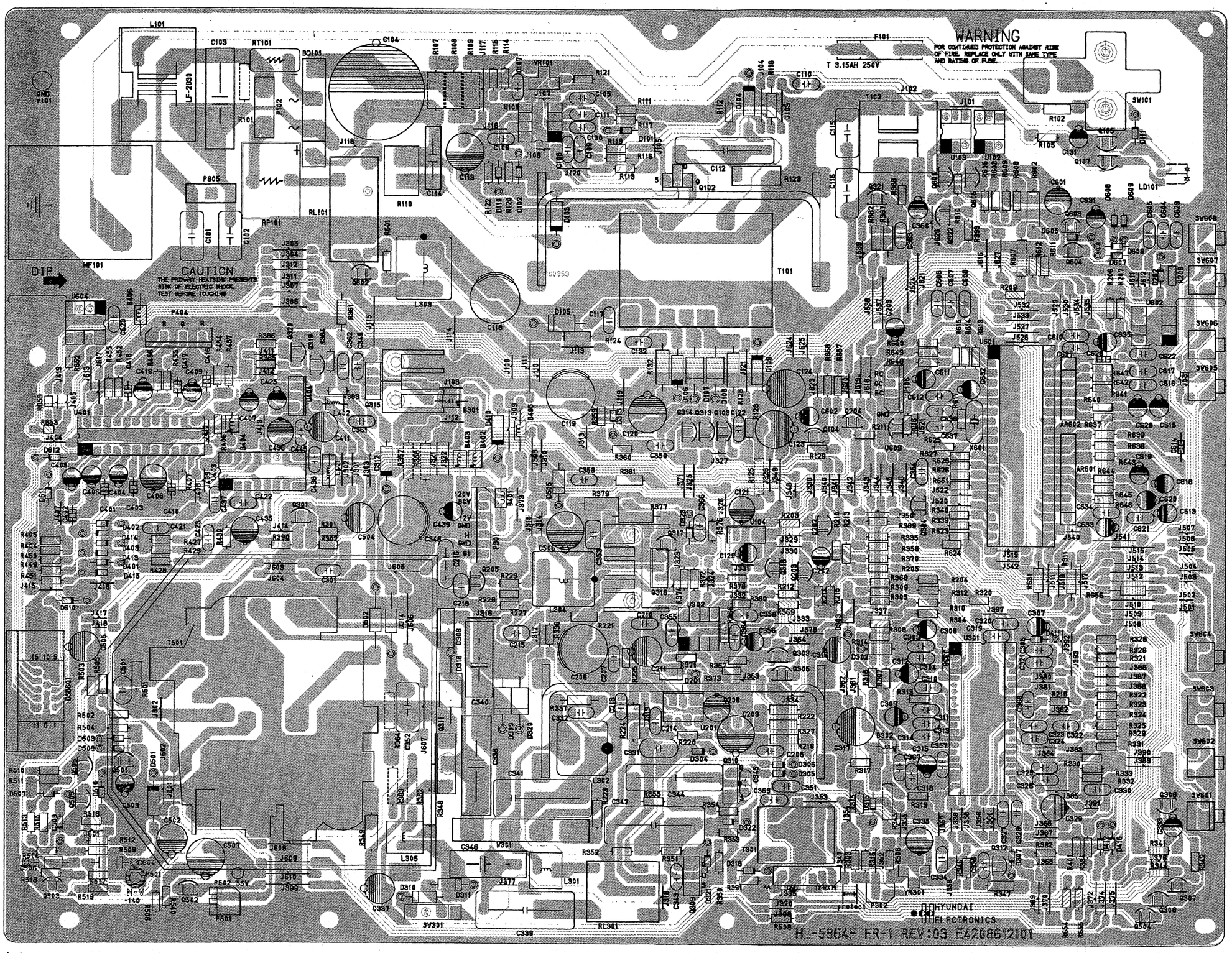


20. VIDEO AMP OUT

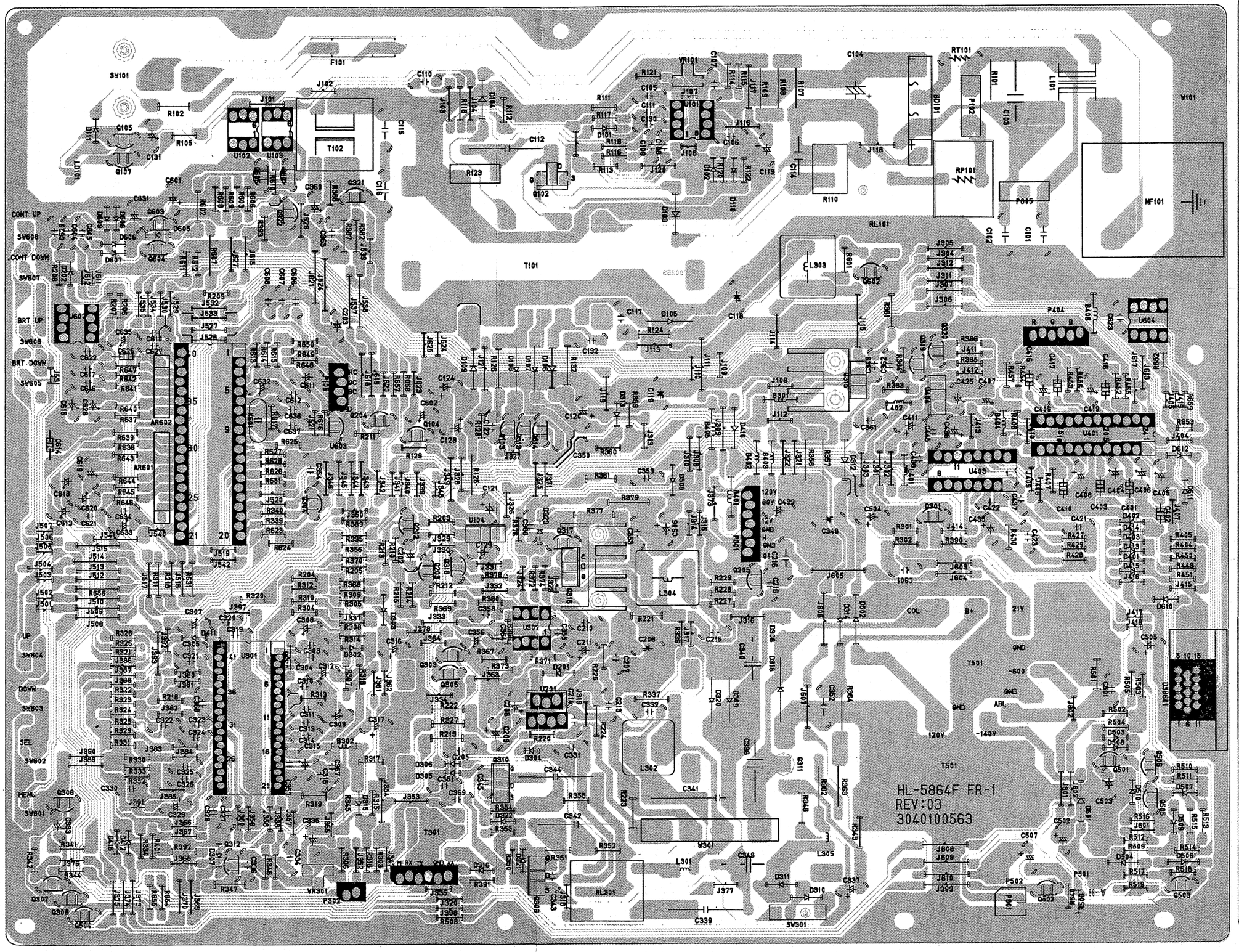
TP20. PIN 3 OF U402

PCB LAYOUT

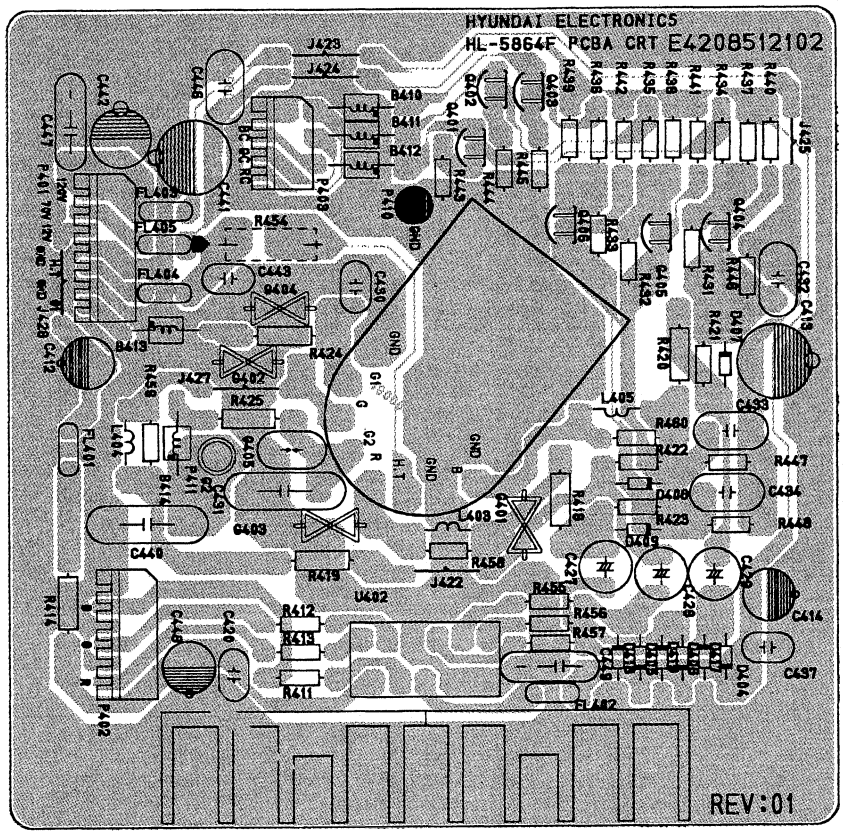
MAIN PCB *COMPONENT SIDE*


WARNING
FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.
T 3.15AH 250V
CAUTION
THE PRIMARY HEATSINK PRESENTS RISK OF ELECTRIC SHOCK. TEST BEFORE TOUCHING
DIP
HYUNDAI
DIELECTRONICS
HL-5864F FR-1 REV:03 E420861201

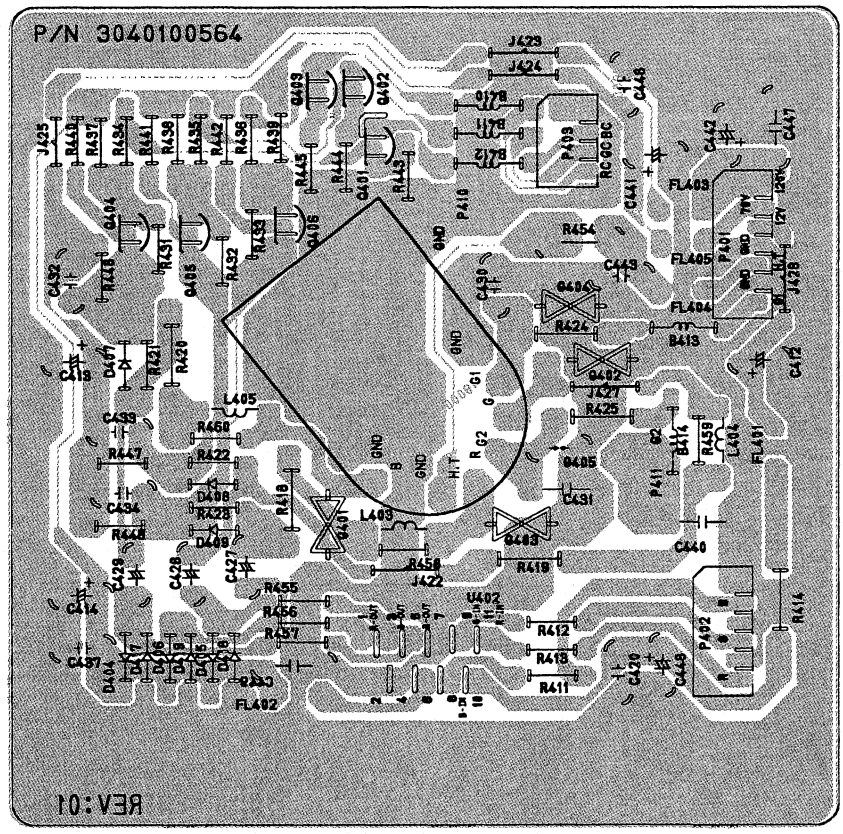
MAIN PCB *SOLDER SIDE*



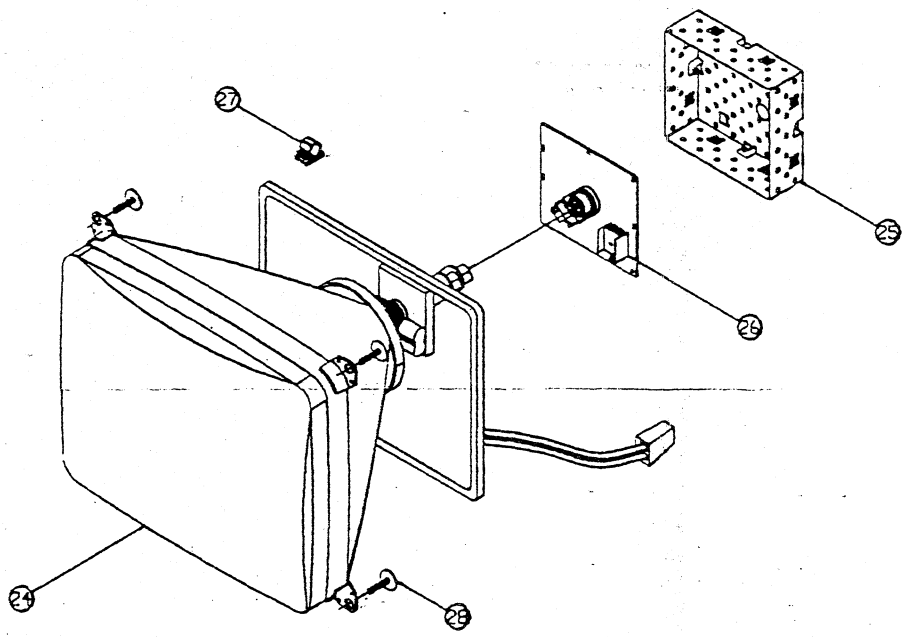
CRT PCB *COMPONENT SIDE*

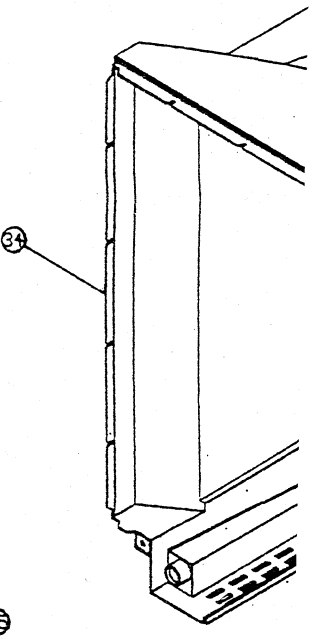


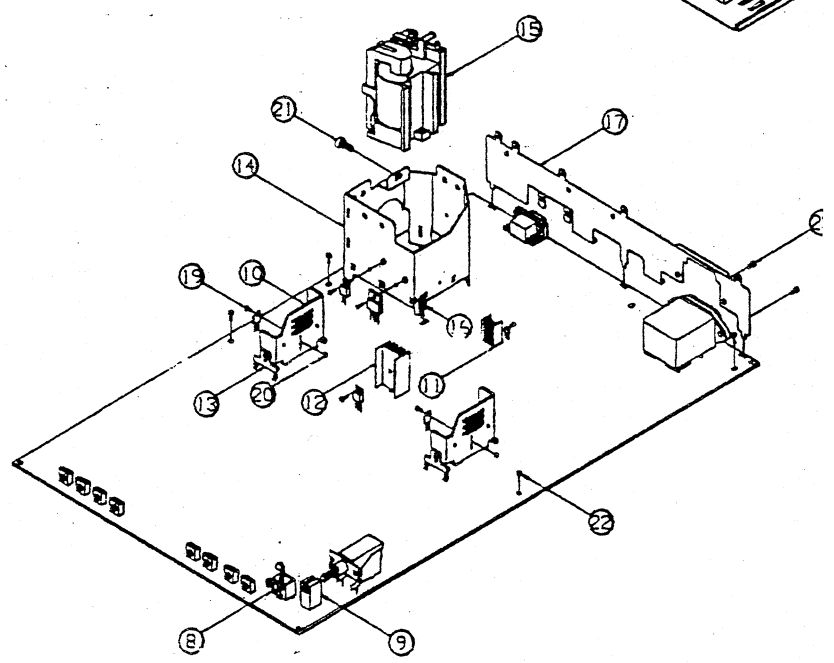
CRT PCB *SOLDER SIDE*

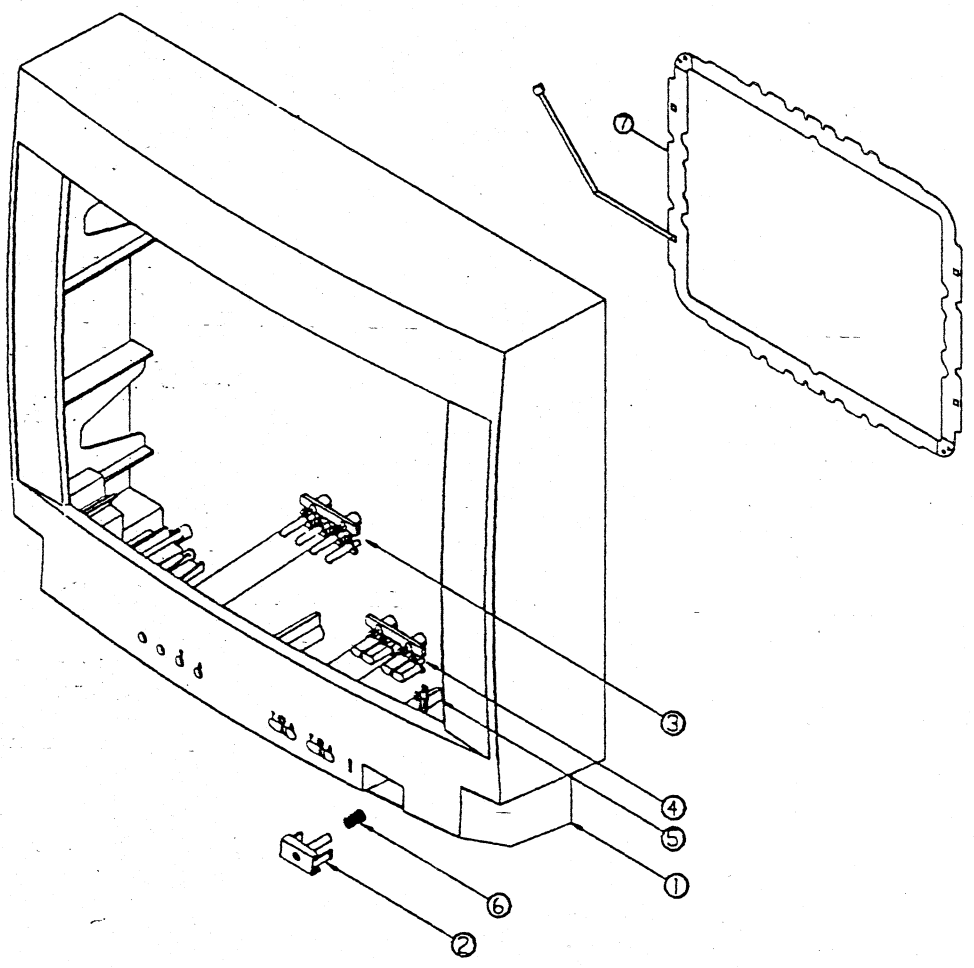


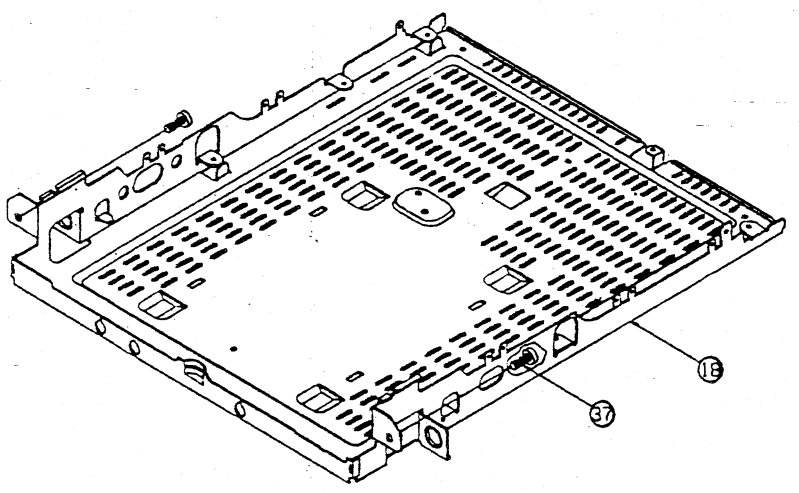
EXPLODED VIEW

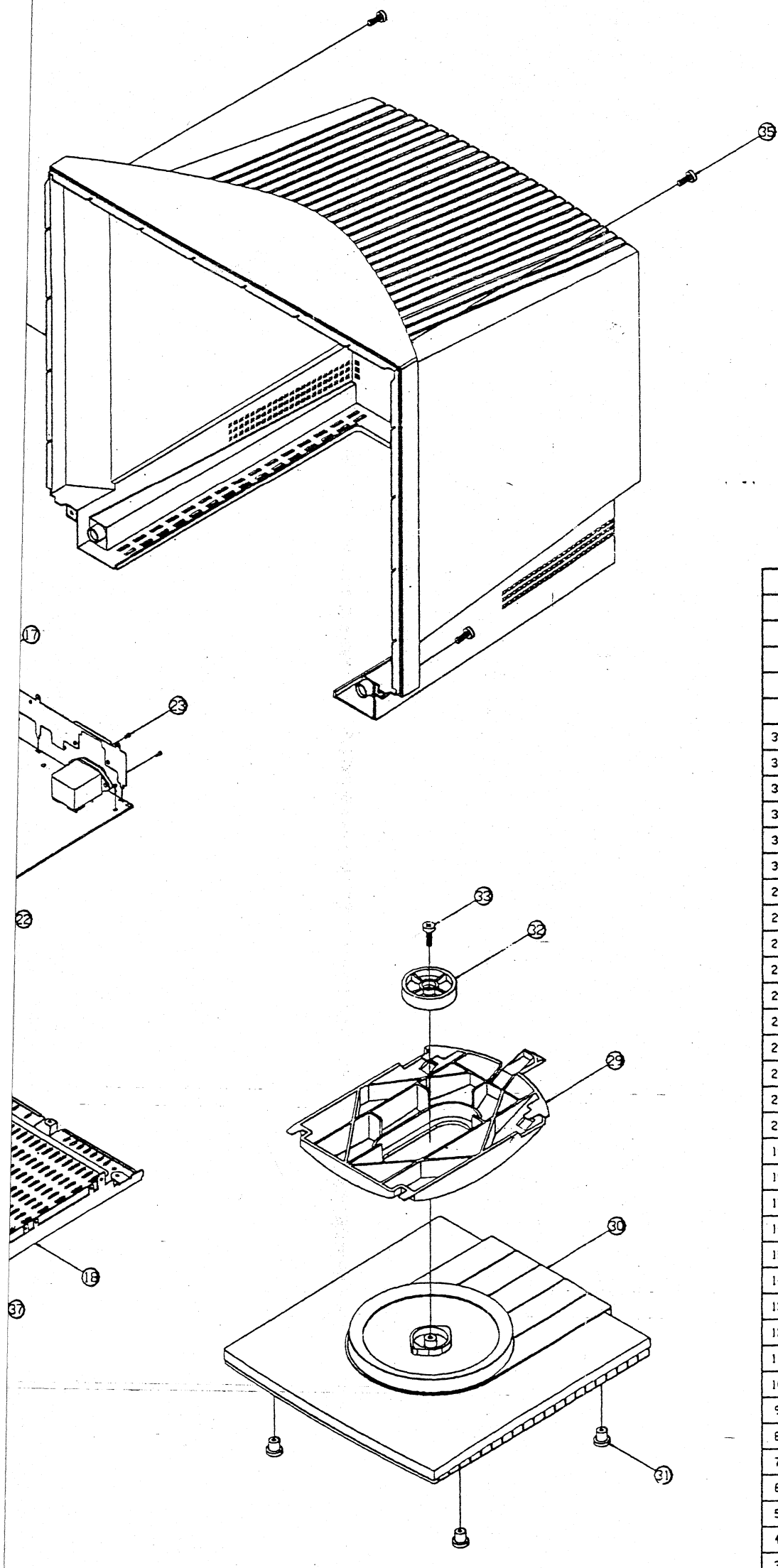












35	M13434014012	SCREW.ST2 TRS(·) 4*14	MSZPC	6	스 크 류
34	B4211512501	COVER REAR	ABS 94V-0	1	커버 리어
33	M13434014012	SCREW.ST2 TRS(·) 4*14	MSZPC	1	스 크 류
32	B4211506301	SWIVEL PAD	NYLON 66	1	스위블 패드
31	B4213501801	RUBBER FOOT	CR 60-70°(94-HB),BLACK	4	러버 풋
30	B4211513301	SWIVEL BASE	PS 55WC(94-HB)	1	스위블 베이스
29	B4211513201	SWIVEL UPPER	PS 55WC(94-HB)	1	스위블 어퍼
28	5003000045	SCREW.ST TRS(·) 5*28	MSZPC	4	스 크 류
27	B4218500601	QUICK CLAMP		1	퀵 클램프
26	6124021700	HEAT SINK VIDEO	A1050P T-2.0	1	히트 싱크 비디오
25	B4211011502	FENCE SHIELD CRT	SPTE T-0.3	1	펜스 실드 시알티
24	E42033039195	CRT, 15"	M36KUK35*05 0.28D	1	시 알 티
23	M11173006012	SCREW.FLAT(·) M3*6	MSZPC	2	스 크 류
22	M11183008012	SCREW.M/WAS(·) 3*8	MSZPC	5	스 크 류
21	M13414010012	SCREW.ST2 PAN(·) 4*10	MSZPC	1	스 크 류
20	M31100030012	NUT HEX. 6N1-3	MSZPC	5	너 트
19	M11143008012	SCREW. BIN(·) M3*8	MSZPC	7	스 크 류
18	6101075400	CHASSIS MAIN	SECC T-1.0	1	시시스 메인
17	B4211011102	BRKT SHIELD	SPTE T-0.5	1	브라켓 실드
16	B4211008901	SOLDER GRIP	SPTE T-0.5	4	솔더 그립
15	3510500036	FBT	KFS-61392	1	에프비티
14	6120013900	FENCE SHIELD FBT	A1050P T-1.0	1	펜스 실드 에프비티
13	6120013700	SOLDER GRIP(DUAL)	SPTE T-0.5	4	솔더 그립
12	B4212501002	HEAT SINK PWR	A1050P T-2.0	1	히트 싱크 파워
11	6124020500	HEAT SINK POWER	A1050P T-2.0	1	히트 싱크 파워
10	6124020000	HEAT SINK V	A1050P T-2.0	2	히트 싱크 브이
9	B4211505301	GUIDE POWER S/W	ABS 94V-0	1	가이드 파워 스위치
8	B4211516201	LED HOLDER POWER	ABS 94V-0	1	엘이디 홀더 파워
7	B4210311201	EMI SHIELD ASSY	A1050P T-0.5	1	이엠아이 실드 어셈이
6	B4214000301	SPRING COM.	SUS 304 WPB	1	스 프 링
5	B4211515901	LED LENS POWER	LUCKY PMMA IF 850	1	엘이디 렌즈 파워
4	B4211515701	KNOB VR	ABS 94V-0	1	노브 브이알
3	B4211515601	KNOB TACT	ABS 94V-0	1	노브 택트
2	B4211515501	KNOB POWER S/W	ABS 94V-0	1	노브 파워 스위치
1	B4211515401	COVER FRONT(N)	ABS 94V-0	1	커버 프론트
NO.	PART NO.	PART NAME	DESCRIPION	QT'Y	품 명

HYUNDAI ELECTRONICS

HL 5864F

A1

TITLE: EXPLODED VIEW

DWG NO. B421000...

REV 00

SHEET 1/1